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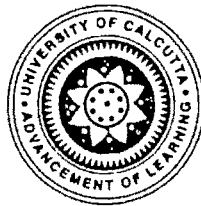
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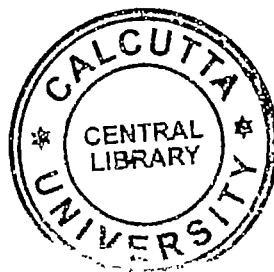
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### **Editor's Note**

Dear Friends,

A hearty greeting to all our readers, contributors and anybody who is in some way or other, associated with the Indian Journal of Educational Research. Hope this year will bring a better tomorrow with honesty, tolerance, solidarity, and peace for us.

This issue contains twenty four articles and seven research abstracts from Ph.D works. A perusal of the articles shows the fulfillment of all the basic purposes of academic research: exploration, analysis, and experimentation. Experimentation is the pivotal point for innovative teaching. Three articles show their findings of experimentation with teaching strategies. Teachers' perception, belief system, and the work-environment have a determining influence on the developing child. Seven papers contributed to that aspect. Mathematics education is an area that always attracts the attention of educationists and researchers. We have three articles in this category. Status survey of school education is a source of valuable inputs for future policy and planning. Four articles shed light on that issue from different perspectives. Three articles are included in historical and philosophical research. Furthermore, several articles on different pertinent issues like test development, ICT, and career choice are being included. However, it is to be noted that the content and opinions expressed in these articles are absolutely of the authors. The Editorial Board of the University is in no way responsible for any sort of controversies in relation to any of the articles.

This is the third issue of the journal. In this brief journey of three years, I have received the whole hearted cooperation from many. I thank to the authorities of the University, my colleagues in the Department, the contributors, the panel of reviewers, and the readers. I specially thank my colleague Dr. Md. Kutubuddin Halder for his silent dedication towards the shaping of the journal. We are all in a big family, trying to enhance and sustain the quality of the journal. If it succeeds in that, the credit goes to all the members. In spite of utmost care, some limitations and incompleteness may crop therein. It is all due to my incompetence to shoulder the responsibility to perfection. I owe your forgiveness for that.

With warm regards,

Dr. Debjani Sengupta  
Professor, Department of Education,  
University of Calcutta

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## **A Study on the Contributions of Some Women Litterateurs towards the Development of Women Education in Bengal (1900-1947) Through their Literary Works**

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*Indrani Adak\* and Mita Banerjee\*\**

### **Abstract**

*Throughout the world, the issue of women education has always been a matter of serious concern for educationists. In India, till date there exists a disparity in the ratio between boys and girls in school and so does in the status of man and woman in the society. Historically it has been found that women education had led to the production of women litterateurs and social activist who in turn have helped in the development of women education. The present research work is an investigation on how women litterateurs have helped in the development of women education, in Bengal, through their literary works. The study has been delimited to only three important women litterateurs between 1900 and 1947. From this extensive study it has been found that the literary works of these ladies have helped in providing impetus to women education in Bengal and has lead to the development of the foundation on which stands the super-structure of women education of modern times.*

**Key Words :** *Women Education, Women Litterateurs, Social Activism*

### **Prelude**

The age old adage, *a pen is mightier than a sword*, has been proved to be true historically down the ages. Litterateurs have always played a vital role in influencing the masses and thereby bringing about a social change. A glimpse through the pages of Indian history illustrates the predominance of male litterateurs. Were women not interested in literary works? Social history points out the barriers in the path of women litterateurs. Indian society had stereotyped women as being compelled to have certain 'womanly' qualities which restricted them to a subordinate role. Along with sati, child marriage, polygamy, and the treatment of widows, illiteracy had played a pivotal role in shaping the future of

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an Indian woman. The superstition driven traditional Hindu society firmly believed, that women education led to widowhood and given the dependence of Hindu wives on their husbands, "*pursuing knowledge was tantamount to suicide*", in the words of Geraldine Forbes (Forbes, 2005).

It was not until the 1850s, when the missionaries along with the colonial Government and various Hindu reform movements such as the *Brahmo Samaj* began to support women's education, that female literacy made any significant progress. Slowly gender biasness gave way to gender equality in all societies and Bengal was no exception. The transformation was difficult but definitely not unattainable.

As women started receiving education, the two chief domains in which women advanced rapidly, in Bengal, were-one in writing and editing various periodicals and journals, the other one is to get involved in national politics. The earliest mention of women writing includes diary writing, short poems, autobiographies and short stories. Spread of women education gave birth to women litterateurs and educational thinkers like Sarala Devi Chaudhurani, Begum Roquiah Sakhawat Hossain, Ashalata Sen and other such literary stalwarts. Women litterateurs of that period were not mere writers but social workers too, and were deeply concerned with the issue of women education.

Contemporary records tell us that between the 1820's and 1830's around the time when well-known '*Kabiyal*' Bhola Moira and Nilu Thakur were at the height of their fame, a women named Jogeshwari formed her own group and toured the districts. She composed '*kabigan*' (a form of poetic dual or repartee, spontaneously composed) which depict the condition of women at that time. Durgadas Lahiri records in his '*Bangalir Gaan*' (Bengal songs), 1906, that around, 1850 in Ghatal area of Midnapore District, there lived a '*farja and jhumur*' artist called Bhabani. She was one of the most eminent exponents of these forms at that time. Rassundari Devi's autobiography '*Amar Jibon*' (*My Life*), 1876, is an astonishing achievement. It was the first autobiography to be written in the Bengali language and it was more than two decades before the next one by eminent Bengali male litterateur Debendranath Tagore, was published in 1898. Therefore we see that it was a humble beginning by women who hardly received any form of formal education. As time passed women education gained impetus and we come across women litterateurs like Sarala Devi Chaudhurani, Begum Roquiah Sakhawat Hossain, and Sushama Sengupta.

The present research work is an investigation on how women litterateurs have helped in the development of women education, in Bengal, through their literary works. The study has been delimited to only three important women litterateurs

between 1900 and 1947. The women litterateurs under study are—Sarala Devi Chaudhurani, Begum Roquiah Sakhawat Hossain, and Sushama Sengupta.

### **Methodology**

The present study follows in general the method of Historical research. This is a non-experimental research and as such, there is no possibility of control or manipulation of variables in the experimental sense. All historical evidences have been scrutinized by the process of criticism both internal and external.

External criticism related to determining the authenticity, validity, or trustworthiness of the source or historical data has been conducted. In the present study the data used are mostly in the nature of written materials. Questions and issues like 'When was the source, written and produced?' 'Where was it produced?' 'By whom was it produced?' 'From what pre-existing material was it produced?' have been dealt with.

Internal Criticism, relating to the determination of the reliability or accuracy of the information contained in the source has also been done. In the present study the researcher has tried to ascertain whether the authors were honest, unbiased and well acquainted with the facts. All sources used in the research study have been scrutinized both externally and internally wherever applicable.

In the present research study historical data from primary sources like writings of women litterateurs, which includes books written by them and their autobiographies, have been used. Secondary sources used include biographies, journals, newspapers, and writings of others on the women litterateurs under study.

### **Sarala Devi Chaudhurani**

Sarala Devi Chaudhurani, a writer, social worker and nationalist was born on 9th September 1872 at Jorashako in Kolkata. Her father Janakinath Ghosal was one of the earliest secretaries of Bengal Congress. Her mother was Swarnakumari Devi, the first successful women novelist of Bengali Literature. Swarnakumari Devi was the daughter of Maharshi Devendranath Tagore, leading *Bramho* leader and elder sister of legendary poet Rabindranath Tagore. Born in such glorious family it was but natural that **Sarala Devi** would have a natural inclination towards literary activities. Sarala Devi started writing at a very young age. At the age of twelve she won herself a prize from the journal '*Sakha*' for writing a poem. Her first article was '*Pitamatar proti ki byabohar kara kartabya*' (duties towards ones parents). Later she edited the highly prestigious journal '*Bharati*', which had been founded by her uncle, Rabindranath Tagore. At first she was the co-editor along with her sister Hironmoyee Devi (Bangabdo 1302-1304), but later she became the editor (Bangabdo 1306-1314) and took the magazine to new

heights. In order to make it a journal representing intelligentsia of Bengal, she was careful not to confine to the Tagore family writers only like 'Balak, 'Sadhana' and 'Punya', Sarala Devi invited contributions from other authors. She was the first to introduce remuneration for writers. The famous Bengali writer Sarat Chandra Chattopadhyay was introduced through 'Bharati'.

Sarala Devi Chaudhurani herself wrote numerous articles and songs and contributed to the excellence of the journal. She also undertook the task of translating the works of famous personalities. She translated Sister Nivedita's work and wrote 'Protek ma cheler janno ki korte pare', Bangabdo 1306 (What mothers can do for their children), 'Bangamatar kortobbo', Bangabdo 1306 (Duties of a Bengali mother). Mahadev Govind Ranade's work was translated into 'Purbokaler samaj sashan', Bangabdo 1307 (Social system of yesteryears). Works of Mohandas Karamchand Gandhi was translated into 'Dakshin Africar Bharafuonibesh' in Bangabdo 1309 (Indian colonies in South Africa).

She also wrote articles related to criticisms of Sanskrit poetries like 'Ratibilap, Malatimadhab', 'Malabikagnimitra', and 'Mrichakahkam'. The great litterateur Bankim Chandra Chattopadhyaya read the criticisms and commented that the criticisms had compelled him to re-read the dramas once again. Later in life she tried to publish all these works together in a form of a book named 'Kabi-Mandir'. But due to her stay in Lahore and 'the inefficiency of the publisher Dinesh Sen, other than the publication of two-three format and not more was done.

Sarala Devi's first notable individual work was 'Premik Sabha'. Her uncle, Rabindranath Tagore congratulated her on this fine piece of work. Sarala Devi wrote numerous articles like 'Durvikho, Babla Gacher kotha, 'Navabarser Sapna, Mrityucharcha' and others which proved her literary skills and led to the qualitative improvement of 'Bharati'.

Her article 'Nari- Mandir' published in the journal 'Wasik Basumati' (Ashard Bangabdo 1330) gives a vivid image of her outlook on women, a woman's position in society and the role of education in a woman's life. She writes— "নারী মন্দিরে পূজারিনীরূপে আহুত হইয়াছি; পূজা পৌছাইতে হইবে। কোন্ দেবতার কাছে? এ মন্দিরে অধিষ্ঠাত্রী কে? দশ মহাশক্তির কোন্ শক্তির উদ্বোধন করিতে হইবে? বাংলাদেশে বর্তমান যুগে নারীর আরাধ্যা কে? নিশ্চয় নির্বিকারা কালিকা, না সম্ভ্রুপাশ্বিকা রজঃ প্রধানা ভুবনেশ্বরী? মেহ, প্রেম, দান, ত্যাগ, তেজ ও ক্ষমার দ্বারা রক্ষণ-পালনশীল সুগৃহিনীত্বের সঙ্গে সঙ্গে স্বাতন্ত্র্যস্বর্গ আজকালকার নারীর কাম্য না কেবলই পুরুষের সুবিধানুকূল কৈবল্যমুক্তি অর্থাৎ তনুমনপ্রাণে পুরুষের ইচ্ছায় লয়প্রাপ্তি।" (Masik Basumati, Ashard Bangabdo 1330)

"Women today are the priest of their own temple. The question arises as to who does she chooses to worship? Kali the goddess without form, quality

and attribute or Bhubaneshwari, who possess the qualities of creation (sattva) and predominantly preservation (rajas). Does she chooses to be an embodiment of care, love, renunciation, power, forgiveness along with being independent or does she chooses to renounce her heart and soul to the wishes of a man?"

She herself provides answer to this vital question by writing—"পুরুষ উপদেবতার পায়ে নারীর আত্মবলিদানের ভোগ আর বেশী দিন আসিয়া জুটিবে কি না সন্দেহ। আজ বঙ্গনারীর নানা ভাষায় নানা ছন্দে বলিতেছেন, তাহারা আর কুণ্ঠিতা, ভীত পুরনারী নহেন...." (*Masik Basumati*. Ashard Bangabdo 1330)

"A woman no longer wishes to forsake her independence at the feet of men anymore."

Sarala Devi is of the view that women are of two types; one who is intelligent, reserved and learned and the other; who is desperate and overt. According to her, whatever may be the quality of modern women, all of them try hard to share whatever they have achieved with the other less privileged women of the society. Here lies their greatness. She writes—"এই তরুণা ফরিয়াদিনীদের মধ্যে দুই প্রকৃতির নারী দেখিতেছি। এক ধীরা, গম্ভীরা, বুদ্ধিবিচার পাণ্ডিত্যের দ্বারা স্বপক্ষ-প্রতিষ্ঠাকারী; অপর 'মারীয়া', অতিভাবিনী। এই শেষোক্তদের বহু আশ্রয়লাভে ভয় হয়। পাছে যতটা গম্ভীর্য, ততটা না বর্ষায়। কিন্তু দুই প্রকৃতির আন্দোলন-কারিণীরই উদ্দেশ্য এক যা নিজেরা ব্যক্তিভাবে উপলব্ধি করিয়াছেন বা প্রাপ্ত হইয়াছেন, তাহা সমষ্টিভাবে নারী সমাজে ব্যাপ্ত করা; যে মহার্ঘ্য বস্তুর স্বাদ নিজেরা মনে মনে বা বস্তুতঃ উপভোগ করিয়াছেন, তাহা নারীজাতির প্রত্যেককে আশ্বাদন করান। তাই তাঁহারা দশের সমক্ষে উপস্থি। তাহারা ধন্য!" (*Masik Basumati*. Ashard, Bangabdo 1330)

Sarala Devi further opines that women know exactly what she wants today. Women desires independence, she wants *swaraj*. Sarala Devi writes—"এখন নারী চায় কি? সে দিন গিয়াছে, যখন পুরুষ বলিতেন,—“বুঝতে নারি নারী কি চায়।” সে চায় অতি-সুস্পষ্ট জিনিষ....নিজের বুদ্ধি ও নিজের হিতাহিতজ্ঞানময় রুচি ও ইচ্ছানুকূল ব্যবস্থাসম্মত জীবনযাত্রা নিৰ্ব্বাহ করা; এক কথায় স্বাভাৱ্য বা স্বরাজ।" (*Masik Basumati*. Ashard Bangabdo 1330)

In the final analysis Sarala Devi concludes that to achieve liberty women have to walk a long way. In her struggle for independence she has to take the help of open-minded men as well face the conservative world. She writes—"কিন্তু এখন দীর্ঘকাল কঠিন তপস্যা করিতে হইবে। প্রত্যেক নারীর সুপ্ত অন্তরাত্মাকে জাগ্রত করিতে হইবে, ক্ষুদ্র হৃদয় দৌৰ্বল্য ছাড়িয়া উঠাইতে হইবে, উদারচেতা পুরুষের দলবদ্ধি করিতে হইবে এবং লঘুচেতা গণের সম্মুখীন হইতে হইবে...." (*Wasik Basumati*. Ashard Bangabdo 1330)

Sarala Devi also wrote in journals other than the '*Bharati*'. Her writings are found in the '*Hindusthan, Review*' where the English version of her articles

on Congress Republic and also on the relation between the Hindu and the Muslims were published. In two issues of the journal of the Mahabodhi Society, Sarala Devi wrote on a programme of conducting women education which received such wide support from the intelligentsia that she later published it in the form of a book, in 1901.

Later in life Sarala Devi also wrote an autobiography—*Jibaner Jharapata*’, which gives a vivid picture of her life and works. The autobiography outlines her thoughts of an independent Indian nation and her view of women’s role within it. This book articulates her passionate advocacy for women’s education and includes fascinating details of the challenges faced by an educated, independent woman at that time. It is through this autobiography that she paints a vivid picture of life within and outside Tagore family. Though women of aristocrat families received education and freedom to a certain extent they too were not always allowed to voice their opinion or live life on their own terms. The male members of the society monitored the degree of freedom to be enjoyed by the women folks. Sarala Devi herself faced a lot of criticism when she chooses to opt for service at Mysore. However she braved all criticism and lived life on her own terms. Throughout her life she fought for women empowerment through education and for the freedom of her motherland.

### ***Hossain, Roquiah Sakhawat***

Hossain, Roquiah Sakhawat a litterateur, educationist, and social reformer (earlier known as Roquiah Khatun) was born on 9th December 1880 at the village Pairabondh, Rangpur in what was then British Indian Empire and is now Bangladesh. Her father Jahiruddin Muhammad Abu Ali Haidar Saber was a local landlord as well as a highly educated person and Rahatunnesa Chowdhury was her mother. Though Roquiah was not allowed to receive formal education, she learnt both Bengali and English with the help of her brothers. Roquiah’s elder brothers and sister not only contributed to educating Roquiah, but also inspired her in writings. From a very early age, Begum Roquiah had decided to fight against the thoughtless customs, which were followed in the society. Her mission was aided greatly by her civil servant husband Syed Sakhawat Hossain. He was proud of her intelligence and encouraged her to befriend educated Hindu and Christian women and to learn English.

Hossain through her writing challenged some of the basic principles of the society and thereby tried to bring about social reform. She made extensive use of humor, satire, irony and pathos to expose the vulnerable points of her opponents. In her writings she not only focused on the lives of Bengali Muslim women, but was also deeply concerned with larger issues affecting the Bengali Muslim community as a whole. In 1903, Roquiah started writing in the journal

'*Nabanoor*', under the name of Mrs R.S. Hossain. However, there is a difference in opinion that her first writing '*Tipasha*' was published in 1902 in the '*Nabaprabha*'. This article is on the Bengali language. She also wrote in journals like '*Saogat*', '*Mohammadi*', '*Nabaprabha*', '*Uahila*', '*Bharatmahila*', '*Al-Eslam*', '*Nawroz*', '*Mahe-nao*', '*Bangiya Mussalman Sahitya Patrika Mussalman*', '*The, Indian Ladies Magazine*' and others.

Roquia's '*Sultana's Dream*' was originally published in English in '*The Indian Ladies, Allagazine*' of Madras, in 1905 and is a notable early work of feminist science fiction of South Asian Muslim literature. It depicts a feminist utopia of role reversal, in which men are locked away in seclusion, in a manner corresponding to the traditional Muslim practice of *purdah* for women. As a result, women run everything, aided by "electrical" technology which enables labourless fanning and flying cars. Crime is eliminated, since men were responsible for it all. The workday is only two hours long, since men used to waste six hours of each day in smoking. The religion is one of love and truth, rather than any traditional faith with a history of denying the rights of women.

Critic Abul Hussain's, writing in 1921 in the Bangla monthly '*Sadhana*' noted the similarities between "*Sultana's Dream*" and Swift's '*Gulliver's Travels*', a book to which Hosain referred in many of her writings. He thought that the perhaps extreme measure of secluding men in Ladyland was "a reaction to the prevailing oppression and vulnerability of our women... perhaps Mrs. R.S. Hosain wrote this to create a sense of self-confidence among the very vulnerable Bengali women... That women may possess faculties and talents equivalent to or greater than men—that they are capable of developing themselves to a stage where they may attain complete mastery over nature without any help from men and create a new world of perfect beauty, great wealth and goodness—this is what "*Sultana's Dream*" depicts... I hope the male readers of "*Sultana's Dream*" would try to motivate the women of their families toward self-realization." (Jahan, 1988)

Another important writing of Roquia includes '*Abarodhbasini*' (*The Secluded Women*, 1931) a forceful attack on the extreme forms of *purdah* that endangered women's lives. It contains some humorous essays that expose some ridiculous consequences of the practice of *Purdah*. Responses to '*Abarodhbasini*' were not so sympathetic. Conservative Muslims were angry, and others were embarrassed. Many resented her making public what had so far been the private side of the community. She was accused on whipping Muslim society and lending credence to the severely critical and patronizing pamphlets on Islam issued by the Christian Tract Society. One critic said that "to her everything Indian is bad and everything Euro-American is good." Some critics tried to discredit the work

as fictitious. One critic suggested that her “readers would have been happy if the respected author had not presented us with these fictions and fables in the name of discrediting seclusion.” (Jahan, 1988)

In an editorial review of both the books Jeris Cassel comments—Ten years before Charlotte P. Gilman published her feminist utopia, ‘Herland’ (1915), “Sultana’s Dream” appeared in an India-based English periodical. It is a clever and appealing story of reversed *purdah* (seclusion of women) in *Ladyland*, where women overpower men through brains rather than brawn. Accompanying this story are selections from *The Secluded Ones*, a factual account of extreme cases of *purdah*. Commentaries by scholars put the works of the little-known Hossain in a global and historical context. It is an interesting and informative work for Asian studies and women’s studies collections. (Cassel, 1988)

It is Roquiah’s much-neglected novella ‘*Padmarag*’ (1924) which shows her bringing together her espousal of women’s personal journeys of growth and emancipation and their working to advance educational equity. ‘*This also shows her powerfully, explicitly, and boldly expressing her belief in an unsectarian, universalist society where women from all races, creeds, and colours, having suffered from patriarchal oppression, determine to better their lot by concrete social action and organising, and devote themselves to the often thankless task of getting out of school girls into school*’.(Bamita Bagchi, Indira Gandhi Institute of Development Research, India. <http://www.countercurrents.org/gender-bagchi011003.htm>.)

Siddika, the protagonist in ‘*Padmarag*’ says—“আমি আজীবন নারীজাতির কল্যাণ সাধনের চেষ্টা করিব এবং অবরোধপ্রথার মূলোচ্ছেদ করিব। আমি সমাজকে দেখাইতে চাই একমাত্র বিবাহিত জীবনই নারীজন্মের চরম লক্ষ্য নহে, সংসার-ধর্মই জীবনের সার ধর্ম নহে।” (Mahmud, 1995).

In her writing it is evident that through Siddika, Begum Roquiah speaks her own mind. She believes that marriage and family are not the sole aim of a woman’s life. Like Siddika, she too pledges to dedicate her life to the service of womanhood and promises to bring out women from the darkness of seclusion.

Her other noted works include ‘*Matichur*’ (essays 1st vol 1904, 2nd Vol. 1922). The second volume of ‘*Matichur*’ Includes stories and fairy tales such as ‘*Saurajaga*’, ‘*Delicia Hatya*’ (translation of the Murder of Delicia, by Mary Corelli), ‘*Jnan-phal*’ (*The Fruit of Knowledge*), ‘*Wari-Sristi*’ (Creation of Women), ‘*Nurse Nelly*’, ‘*Mukti-phal*’ (*The Fruit of Emancipation*) and others.

In most of her literary works, Roquiah protest vehemently against oppression of women. In the preface to *Delicia Hatya*, Roquiah writes—“আজ আমরা

ইংলণ্ডের সামাজিক অবস্থার সহিত আমাদের সামাজিক দুরবস্থার তুলনা করিয়া দেখিব—অবলা পীড়নে কোন সমাজ কিরূপ সিদ্ধহস্ত। ইংরেজ রমনীর জীবন কিরূপ আমরা মনে করি তাঁহারা স্বাধীন বিদুষী, পুরুষের সমকক্ষ, সমাজ আদৃত—তাঁহাদের আরও কত কি সুখ-সৌভাগ্যের চাকচিক্যময় মূর্তি মানসনয়নে দেখি। কিন্তু একবার তাহাদের গৃহাভ্যন্তরে উঁকি মারিয়া দেখিতে পারিলে বুঝা যায় সব ফাঁকা। দূরের ঢোল শুনিতে ক্ষতিমধুর।” (Mahmud, 1995)

Here Roquiah makes a comparison between the women of the East and the West. She writes that there is a lot of glitter in the life of a western woman. Indian society thinks that western women are independent, intelligent, equivalent to men and are respected in the society. But once we look into their house hold we find that it is the same story of patriarchal oppression.

Roquiah was also an excellent poetess. Her poem titled ‘Saogat’ was published on the first page of the first issue of the ‘*Saogat*’ in *Agrahayan*, 1325 (Bangabdo). She also left behind numerous letters in Bangla and English. ‘*Rokeya Racanavali*’ published by the Bangla Academy in 1973 included her unpublished writings and letters both in Bengali and English including her unpublished poetry.

Begum Roquiah was working on an essay entitled *Narir Adhikar* (The Rights of Women) when she died in December, 1932. It was a thesis to be prepared for her organization Anjuman e Khawateen e Islam (Islamic Women’s Association) which remained unfinished.

### ***Sushama Sengupta***

Sushama Sengupta was born on 9th September 1903 in Calcutta. At the age of six, she was admitted to *Bramho Balika Shikalaya*, which was quite a revolution at a time when women education was an alien issue in Bengal. Sushama Sengupta inherited her literary genes from her father Naresh Chandra Sengupta, who was also a litterateur apart from being a renowned lawyer. In her early life Sushama Sengupta wrote regularly in dailies like ‘*Advance*’ and Binoy Sarkar’s ‘*Arthik Unnyati*’. In the literary world her forte was short stories. Many of her short stories were published in ‘*Galpo Bharati*’. She also wrote books namely ‘*Agami*’, ‘*Chirantani*’, and ‘*Disrota*’. ‘*Agami*’, and ‘*Chirantani*’, are compilation of short stories whereas ‘*Disrota*’ is a novel.

The subject of her writing was invariably women. Sushama Sengupta has travelled widely in different countries of the world and had an opportunity to witness the lifestyles of women in-different societies. In her ‘*Chirantani*’, a collection of short stories, she laments that the condition of women in all societies of the world is the same. Whether in India or elsewhere, women are oppressed by the male dominated society.

In her short story ‘*Adrister Parihas*’ (Irony of fate), she talks about the

inability of today's formal system of education, to instill values in students. She poignantly remarks that formal education brings about change in the overt behavior of a person but fails to inculcate human values such as the ability to pardon, tolerance, love, renunciation, truthfulness, respect for elders and other such qualities. She writes—“....এ মেয়েকে মানুষ করা কি করম জটিল ব্যাপার হয়ে দাঁড়াবে সে কথা যতই ভাবতে লাগলাম ততই আমার কাছে পরিষ্কার হতে লাগলো। মেয়ে ভদ্রলোকের সঙ্গে মিশে হয়ত ভদ্রলোকের বাহ্যিক আচার ব্যবহার শিখবে, হয়ত শুদ্ধ বাংলা এবং বিশুদ্ধ ইংরাজী বলবে, কেতাদুরস্ত ভাবে সাজগোজ করবে, কিন্তু তাতে মানুষ হবে কি? মানুষোচিত যে সব গুণ বিনা শিক্ষায় ওর মার মধ্যে রয়েছে, সেটা ও পাবে কি? ক্ষমা, সহিষ্ণুতা, নিঃস্বার্থ প্রেম, ত্যাগের স্পৃহা, মিথ্যাচরণে বিতৃষ্ণা এই সব মায়ের সহজ গুণগুলি ওর হবে কি? সবচেয়ে একটা ভয়াবহ চিন্তা হঠাৎ আমরা মাথায় ঢুকল এই যে শিক্ষা পেয়ে এই মেয়ে তার মাকে শ্রদ্ধা করবে কি? ...বস্ত্রবাসিনী পরিচারিকা মায়ের প্রতি শিক্ষিতা মেয়ের মনোভাব প্রসন্ন না হওয়াই সম্ভব। মনে হল তা যদি হয় তবে তো লেখাপড়া শিখিয়ে এ মেয়ের আমি মঙ্গলের চাইতে অমঙ্গলই বেশী করব।...” (Sengupta, 1948)

In her book '*Agami*' she discusses a wide range of issues. She begins with the role of parents in the life of a child. According to her, parents try to make our life smooth by deciding on the major issues of our life, be it the selection of a job or selection of a spouse for marriage. The rest is left on fate. Sushama Sengupta writes—“আমাদের দেশে অধিকাংশ পিতামাতা এ অভিজ্ঞতার তিস্ততার অংশটুকু ছেলেপুলেদের ভাগ্যে কমানোর চেষ্টা করেন যথাসাধ্য, আগেই তাদের পথ বেধে দেবার চেষ্টা করে। ছেলেকে যা হোক খানিকটা লেখাপড়া শিখিয়ে যে কোন একটা চাকরীতে ঢুকিয়ে বিয়ে থা নিজেরাই দেখে শুনে দিয়ে সংসারী করিয়ে নাতি নাতনীর মুখ দেখতে চান। মেয়েকেও কালোপযোগী যতটা সম্ভব তাড়াতাড়ি বিয়ে দিয়ে তাকেও জীবনে স্থিতিশীল করিয়ে দিয়ে যান, ঘর-বর যতটা সম্ভব দেখে দেন জীবনের পথ বেছে নেবার দায়িত্বের হাত থেকে তাদের যতটা সম্ভব রেহাই দিতে চান। তারপর অবশিষ্ট তাদের ভাগ্য।” (Sengupta, 1948)

Sushama Sengupta strongly believes in the role of fate in our lives. She opines that human beings are responsible for their own fate. But it is human nature that when we are unsuccessful in life we hold our fate responsible for it and when we taste success we ascribe it to our own deeds. She writes—“কিন্তু এই ভাগ্যের হাত থেকে রেহাই নেই কারো।...নিজের ভাগ্য শেষ পর্যন্ত নিজেরই রচনা করতে হয়। ব্যর্থ যার জীবন সে বলে, তার রচনা হয় অদৃষ্ট বিধাতার লিখনে; সার্থক পুরুষ বলে, সে হয় পুরুষকারে—কিন্তু যার ফলেই হোক, তা অদৃষ্ট—অর্থাৎ আমাদের গোচরীভূত দৃষ্টির বাইরে, সে সম্বন্ধে কোন সন্দেহই নেই এবং এর কোন বাঁধা-ধরা ফরমুলাও নেই।” (Sengupta, 1948)

It is again here in '*Agami*', Sushama Sengupta tries to resolve the age-old conflict between science and philosophy. She is of the opinion that we are often mistaken by the idea that science deals with all that are tangible and the content of philosophy is that which is intangible. In '*Agami*', one of the character who

is a professor, asks how much of this universe is tangible to man? The great intangible universe is studied through logical conclusion which forms the base of philosophy. Thus science and philosophy mingles at some point of time. In 'Agami', Sushama Sengupta writes—"প্রফেসর বলেন—দেখ, অনেকে ভাবে, বিজ্ঞান বুঝি যা-কিছু অনুভূতি সাপেক্ষ বস্তু তাই নিয়েই নাড়াচাড়া করে, আর দর্শনের কারবার অপ্রত্যক্ষ, দৃষ্টির অন্তরালবর্তী বিষয় নিয়ে যা নাকি মানুষের প্রত্যক্ষানুভূতির বিচা-রসাপেক্ষ নয়। একথা মহা ভুল। ল্যাবরেটরীতে কতটুকু জিনিষ গোচরে আনা যায়?...তার বাইরে পড়ে রইল বিরাট বিশ্ব্যার সম্বন্ধে শুধু ধারণা করা ছাড়া আর উপায় নেই, এবং সেও যেতে হয় কেবল তর্ক শাস্ত্রের পথ ধরে।...দর্শনের সেই "অণোরণীয়া ন মহতো মহীয়া নের" মধ্যেই আমাদের এই বস্তুতাত্ত্বিক বিজ্ঞান আমাদের নিয়ে ফেলেছে-সবার শেষে দর্শনে বিজ্ঞানে একাকার হয়ে গেছে..." (Sengupta, 1948)

Sushama Sengupta wrote at a time when India had just gained her independence through bitter struggle. In most of her writings we find the backdrop of India's struggle for independence. In 'Agami', Sushama Sengupta discloses her views on women education. She observes that women power needs to be harnessed for the upliftment of a society. It is important that the womb (woman) that gives birth to a nation must be learned. The first lesson that a child learns is from his/her mother, therefore it is vital that women should be educated. She further argues that the role of women is not only of a mother. Women should also participate in the task of nation building (in the context of the story-fight for independence of her motherland). In 'Agami', Sushama Sengupta writes—"রুদ্রপ্রতাপ তাকে জানিয়েছে কেন চাই তার কাজে—আগামীর জাগাতে হবে দেশের নারীশক্তিকে। রুদ্রপ্রতাপ বলে—যার গর্ভে জন্ম নেবে জাতি, যার স্তন্যদুগ্ধে হবে তার পুষ্টি, শৈশবের প্রথম বুলি, প্রথম শিক্ষা হবে যার ক্রোড়ে সে যদি হয় ভীকু কাপুরুষ, মেরুমজ্জাহীন, তবে কিসের জোরে জেগে উঠবে জাতি? এদের জাগান, এদের মধ্যে প্রাণশক্তি সঞ্চার হবে বড় কাজ।"

"শুধু বীরসন্তান পালন করেই নারীর কর্তব্য যে শেষ হবে তা নয়, নারীর নিজেরও বেরিয়ে এসে কার্যভার মাথায় নিতে হবে। এ ভারত বীরনারীর দেশ—সুভদ্রা, প্রমীলা থেকে শুরু করে কম্মদেবী, দুর্গাবতী, লক্ষ্মীবাই এর দেশ..."(Sengupta, 1948)

### Observations

Thus it is seen that the women litterateurs under study have ventured into almost all literary genre. Sarala Devi tried her hands in almost every field of literary work, be it, article, poetry, songs, short story, novel or autobiography. Her literary works reveal a rich cultural base. She wrote on almost every topic available—political, social, historical, cultural, patriotic and others. Begum Roquiah on the other hand started with short story in English and later continued with articles, poems and novels. Her area of concern was gender inequality. Sushama Sengupta wrote mostly on social issues. Her concern was women, her education and her various roles in the society. Her literary works were limited to short stories, novels and article.

These illustrious ladies did not limit themselves to literary work only. They were also great social workers and educationists. Whatever they preached through their writings, they tried to implement them through their social activities. Sarala Devi Chowdhurani dedicated her life for the well-being of her countrymen. As an active social worker she had established the famous Bharat Stree Mahamandal, an organization dedicated to the welfare of the women and children. Begum Roquiah's Anjuman-e-Khawatin-e-Islam, or the Muslim women's society founded in 1916, continues to function in Kolkata and is a source of inspiration to many working for the upliftment of Muslim women in destitute. The schools started by Begum Roquiah (Sakhawat Memorial Government Girls' High School) and Sushama Sengupta (Lake School for Girls') are premium government schools of Kolkata today. Following an updated curriculum these schools continue to serve the cause of women education till today.

### Conclusion

The works of many of these great ladies have faded away with time but one cannot deny the fact that their works have helped shape the future of women of today. Born in an era when women education was unheard of these ladies have walked a long way. Their path was not smooth but yet they braved social criticism and worked for their fellow beings. With little or no formal education these ladies have written books, established schools, formed social welfare organizations and above all contributed their part in advancing their motherland. Indeed they are role models for today's women, who are fortunate to receive formal education as a fundamental right.

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## Attitude towards Constructivist Approach and Self-Efficacy : Perspective of Secondary School Teachers

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*Abhijit Guha\* and Ujjwal Paul\*\**

### Abstract

*Teacher's self-efficacy shapes his/her effectiveness in the classroom teaching. Teachers having high self-efficacy show more flexibility in their teaching and put their endeavor to help all students in attaining desired learning. Constructivism as a set of belief leads directly to a method of teaching which, in turn, stimulates the students with the power to become active learners. The present study was conducted to inquire the attitude of school teachers of W.B. in advocating constructivist approach in their teaching strategy and its relationship with self-efficacy. CASST and OSES were administered on 216 randomly selected school teachers for measuring their attitude towards constructivist approach & teacher self-efficacy under two categorical variables viz. location of school (urban and rural) and gender (male and female). It was observed that the teachers of W.B. possess a moderately positive attitude towards constructivist approach in teaching learning process and no significant difference was observed in attitude towards constructivist approach with respect to location of school and gender of teachers. Location of school-wise difference in teacher self-efficacy was observed significant and gender-wise difference in teacher self-efficacy was observed insignificant. It was also observed that teachers' attitude towards constructivist approach and teacher self efficacy had a nearly moderate positive correlation.*

**Key Words :** *Constructivist Approach, Teachers' Attitude, Self-Efficacy*

### Introduction

Formal and informal interaction between teacher and student in social relationship setting supports learning to take place. Schools are institutional places for communities of learners, including both students and teachers. Now-a-days 'Constructivist approach' in school education system is widely discussed, praised and accepted by educationists of abroad and also in India. National

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Curriculum Framework, 2005 (NCF, 2005) Published by NCERT also puts emphasis on this approach to teaching and learning. Constructivism works on the philosophy that there is no knowledge independent of the meaning attributed to experience (constructed) by the learning, or community of learners. Knowledge construction means that students construct their own knowledge by actively participating in the process of learning and seeking to find their own meaning in their experiences. Literally, it can be said that learners construct, find or develop meaning in their subjective experiments, and this result becomes knowledge for them (Murphy, 1997). Teacher can passively make the favorable environment for achieving the learner's goal. Presently constructivist approach in teaching learning has drawn the interest of educators and this approach been emphasized much to enhance learning of the students though prevalent or traditional approach in teaching is still in craze which can be supported by the comment of Tobias (2010), "When new paradigm becomes prominent it captures most of the attention, though some supporters continue to endorse the prior view and conduct research and development activities on the prior paradigm" (p.336). He explained 'constructivist approach' as a paradigm shift in modern learner centered teaching-learning process (pp. 336-339).

Self-efficacy of a teacher shapes his/her effectiveness in the classroom teaching. Teachers having high self-efficacy show more flexibility in their teaching and put their endeavor to help all students in attaining desired learning. The accountability of teachers and students is the key to success of schools and reformation initiatives in school suffer failure may be due to the indifference and easiness in mentality of teaching community.

Bandura (1997, p.3) defined self-efficacy as "*beliefs in one's capabilities to organise and execute the course of action required to produce given attainments*". Self-efficacy therefore influences thought patterns and emotions that enable classroom actions. In the context of education, teacher self efficacy is considered a powerful influence on teachers' overall effectiveness with students. Self-efficacy is a construct originated by Albert Bandura to describe an individual's belief in his\*or her own capabilities. High levels of self-efficacy in teachers may have a positive impact on student achievement. Teacher's teaching efficacy is related to the belief in command over teaching, while one's belief in the ability to influence classroom events is his personal efficacy. Hoy (2000) commented, "*Teacher Self-Efficacy is teachers' confidence in their ability to promote students' learning.*"

According to Sorenson, "*An attitude is a particular feeling about something. It therefore involves a tendency to behave in a certain way in situations which involve that something, whether person, idea or object. It*

*is partially rational and partially emotional and is acquired, not inherent, in an individual.*" (1977, p.349) Constructivism concentrates on learning how to think and understand. This learning is transferable. This situation gives students ownership (stake holder) what they learn, since learning is based on students' questions and explorations. Students in constructivist classrooms learn to question things and to apply their natural curiosity to the world. Von Glasersfield (1995) as cited in Allus & Bruce (2008), "Constructivism as a set of beliefs provides a model of cognition that leads directly to a method of teaching that, in turn, credits the student with the power to become an active learner. Teaching aims at enabling students to generate activities out of the understanding of why they should be performed and the explanation that they lead to desired results" (p.90).

Researchers often observed that the self efficacy belief role of pre-service teachers to be positive. Furthermore the self efficacy beliefs in creating democratic learning environment are to be highly positive (Evrekli et al. 2010). The teachers practicing learner-centered approaches use their self-efficacy in order to be effective in teaching; and the role of Teacher efficacy and Characteristics on Teaching Effectiveness, Performance, and use of Learner-Centered Practices are highly correlated. (Magno and Sembrano, 2010). Ahmed (2009) stated that in this millennium constructivist learning had emerged as a forceful approach to teaching and learning. All new learning was based on previous learning which includes various concepts of the concerned subjects such as biological concepts or scientific concept. The attitude of teachers determines his behavior of teaching and guides him to adopt constructivist approach as teaching strategy which might help in students' achievement and make the sense of positive influence of teacher self-efficacy. Thus the teachers' attitude towards constructivist approach and its relationship with teacher self efficacy was felt necessary to inquire about in Indian perspective especially in West Bengal.

### ***Objectives of the Study***

Following major objectives were set for the present study:

1. To study and compare the attitude towards constructivist approach of the Secondary school teachers in teaching-learning process under different categorical variables.
2. To study and compare the teachers' self-efficacy under different categorical variables like gender, location of school.
3. To study the relationship between teachers' attitude towards constructivist approach and teacher self-efficacy.

### ***Hypotheses***

- H<sub>0</sub>1: There would be no significant difference between urban and rural teachers in their attitude towards constructivist approach in teaching-learning process in secondary schools.
- H<sub>0</sub>2: There would be no significant difference between male and female teachers in their attitude towards constructivist approach in teaching-learning process in secondary schools.
- H<sub>0</sub>3: There would be no significant difference in self-efficacy scores between the teachers of rural school and urban school.
- H<sub>0</sub>4: There would be no significant difference in self-efficacy scores between the male and female teachers.
- H<sub>0</sub>5: There would be no significant relationship between teachers' attitude towards constructivist approach and teachers' self-efficacy.

### ***Method***

#### ***Sample***

All the teachers of secondary schools in West Bengal were the population in the study. 216 school teachers of secondary level schools were selected randomly from four districts of West Bengal as sample for this study. Among the members of sample, the number of male is 135 (62.5%), female is 81 (37.5%) and urban teacher is 132 (61.1%), rural teacher is 84 (38.9%).

#### ***Tools***

To self- made attitude scale to measure the teacher's attitude towards constructivist approach (CASST). Occupational Self Efficacy Scale (OSES), constructed and standardized by Pethe, Chaudhari and Dhar (1999). The Constructivist Attitude Scale for School Teacher (CASST) was consisted of 28 items; Content validity was judged by the expert rating of items by three experts. The inter-rating agreement model was used (Gregory, 2005) to see reliability of the raters. The coefficient of content validity was 0.92. The reliability of the scale was computed by using Cronbach's Alpha was found to be 0.826. The categories of responses were 'strongly agree', 'agree', 'undecided', 'disagree', 'strongly disagree' and '5', '4', '3', '2', '1' were the respective scores awarded for the responses. Some items were negative in nature and the scoring was done in reverse order. The Occupational Self-Efficacy Scale (OSES) was constituted of nineteen items. Besides face validity, as all items in the scale are concerned with the variable under focus, the scale had high content validity (0.99). The odd-even reliability of the

scale was determined by calculating reliability coefficient, corrected for full length for a sample of 220 subjects. The reliability coefficient of the scale was 0.98. It was a five point rating scale and the categories of responses were 'strongly disagree', 'disagree' 'undecided' 'agree', 'strongly agree' and '1', '2', '3', '4', '5' were the respective scores awarded for the responses.

### ***Data Collection***

For conducting the study, data had been collected in one phase. 22 schools were selected randomly from the district of North 24 Parganas, Hooghly, South 24 parganas and Howrah. Two scales were administered to 216 teachers from those schools chosen under study and asked to respond according to their own belief and thought without any consultation with another teacher and to submit the responded scale by putting it into an envelope to maintain confidentiality.

### ***Analysis and Interpretation***

#### **Test of Normality**

**Table 1: Result of Shapiro-Wilk Test**

Scale	Shapiro-Wilk		
	Statistic	df	Sig.(p value)
CASST	.992	216	.242
OSSES	.989	216	.086

CASST=Constructivist Attitude Scale for School Teacher, OSSES=Occupational Self Efficacy Scale.

The table 1 shows that the 'p' value of Shapiro-Wilk test in case of Attitude towards constructivist approach is 0.242, ( $p > .05$ ), in case of Teacher self efficacy is 0.086, ( $p > .05$ ). Hence, data are normally distributed in both the cases and the use of parametric tests to verify the hypotheses were justified.

#### **Average Attitude towards Constructivist Approach**

The average of scores of CASST of 216 teachers of 28 items was found 3.64 which show that the attitude of teachers towards constructivist approach is moderate in nature.

### ***Testing of Hypotheses***

H<sub>0</sub>1: There would be no significant difference between urban and rural teachers in their attitude towards constructivist approach in teaching-learning process in secondary schools.

**Table 2 : Attitude Towards Constructivist Approach Location of School**

Descriptive statistics				Levene's Test for Equality of Variances		t-test for Equality of Means		
location of school	N	Mean	Std. Deviation	F	Sig.	t	df	Sig. (2-tailed)
urban	132	101.235	8.82905	1.135	.288	-1.162*	214	.246
rural	84	102.643	8.43493					

(\*not significant at 0.05 level of significance)

The Levene's test for equality of variances in table 2 shows that the p value is .288 ( $p > .05$ ) so, homogeneity of variances can be assumed. Table 1.2 also shows that in case of comparing the attitude towards constructivist approach of teachers of rural school and urban school, the calculated  $t_{(214)}$  value is -1.162 and 'p' value is 0.246 ( $p > 0.05$ ). Hence, t is not significant at 0.05 level and  $H_0 1$  is retained. So, it can be interpreted that teachers do not possess significantly different attitude towards constructivist approach in teaching learning with respect to the location of school (urban and rural).

$H_0 2$ : There would be no significant difference between male and female teachers in their attitude towards constructivist approach in teaching-learning process in secondary schools.

**Table 3: Attitude Towards Constructivist Approach Gender**

Descriptive statistics				Levene's Test for Equality of Variances		t-test for Equality of Means		
Gender	N	Mean	Std. Deviation	F	Sig.	t	df	Sig. (2-tailed)
male	135	101.763	8.7913	.002	.969	-.042*	214	.966
female	81	101.815	8.5602					

(\*not significant at 0.05 level of significance)

The Levene's test for equality of variances in table 3 shows that the p value is .969 ( $p > .05$ ) so, homogeneity of variances can be assumed. Table 3 also shows that in case of comparing the attitude towards constructivist approach of male and female teachers, the calculated  $t_{(214)}$  value is -0.042 and 'p' value is 0.966 ( $p > 0.05$ ). Hence, t is not significant at 0.05 level and  $H_0 2$  is, therefore, retained. So, it can be interpreted that the male teachers do not possess significantly different attitude towards constructivist approach in teaching-learning from the female teachers.

H<sub>0</sub>3: There would be no significant difference in self-efficacy between the teachers of rural school and urban school.

**Table 1.4: Self Efficacy of Teachers Location of School**

Descriptive statistics				Levene's Test for Equality of Variances		t-test for Equality of Means		
location of school	N	Mean	Std. Deviation	F	Sig.	t	df	Sig. (2-tailed)
urban	132	76.788	6.8295	0.010	0.920	2.387**	214	0.018
rural	84	74.571	6.3612					

(\*\*significant at 0.05 level of significance)

Analyses of Levene's test for equality of variances in table 4 shows the p value is 0.920 ( $p > .05$ ) so, equality of variances can be assumed. Table 4 also shows that in case of comparing self efficacy of teachers urban school and rural school, the calculated  $t_{(214)}$  value is 2.387 and 'p' value is 0.018 ( $p < 0.05$ ). Hence, t is significant at 0.05 level and H<sub>0</sub>3 is rejected. So, it is interpreted that urban teachers are significantly different from the rural teachers in respect of self efficacy.

H<sub>0</sub>4: There would be no significant difference in self-efficacy between the male and female teachers.

**Table 5 : Attitude towards Constructivist Approach Gender**

Descriptive statistics				Levene's Test for Equality of Variances		t-test for Equality of Means		
Gender	N	Mean	Std. Deviation	F	Sig.	t	df	Sig. (2-tailed)
male	135	76.556	6.2613	3.272	0.072	1.786*	214	0.076
female	81	74.877	7.3525					

(\*not significant at 0.05 level of significance)

Analyses of Levene's test for equality of variances in table 5 shows the p value 0.072 ( $p > .05$ ) so, homogeneity of variances can be assumed. Table 5 also shows that in case of comparing the self efficacy of male teachers and female teachers, the calculated  $t_{(214)}$  value is 1.786 and 'p' value is 0.076 ( $p > 0.05$ ). Hence, t is not significant at 0.05 level and H<sub>0</sub>4 is retained. So, it is interpreted that male teachers are not significantly different from the female teachers in self efficacy.

H<sub>05</sub>: There would be no significant relationship between teachers' attitude towards constructivist approach and teachers' self-efficacy.

**Table 6 : Correlation of Attitude Towards Constructivist Approach and Self Efficacy**

		Attitude towards constructivist approach	self efficacy
Attitude towards constructivist approach	Pearson Correlation	1	.301**
	Sig. (2-tailed)		.000
	N	216	216
self efficacy	Pearson Correlation	.301**	1
	Sig. (2-tailed)	.000	
	N	216	216

\*\* Correlation is significant at the 0.01 level (2-tailed).

To study the relationship between teachers' attitude towards constructivist approach and teachers' self efficacy, it has been found from analysis in table 1.6 that, correlation coefficient i.e. 'r' between score of CASST and OESES is 0.301 and p value is 0.000( $p < 0.05$ ) which is significant at the 0.01 level. Hence, H<sub>05</sub> is rejected. So, it can be interpreted that there exists a nearly moderate positive correlation between teachers' attitude towards constructivist approach and teachers' self efficacy.

### Discussion

Constructivism emphasizes the importance of the knowledge, beliefs and skills that an individual brings to the experience of learning. Within the realm of learning theory, the constructivist theory believes in construction of knowledge and understanding (Pat, 2004). The terms, such as "scaffolding", expresses the concept of progress of learning and the existence of support systems in learning which may enhance the process. The teachers, who are to play an important role in scaffolding, have influenced the learning of their students from time immemorial. While to study the present scenario of constructivist approach that was adopted by school teachers of West Bengal (W.B.), it has been found that teachers' attitude towards constructivist approach in teaching is moderately positive. Uredi (2012), in his research, found that most classroom teachers attitudes towards the constructivist approach were positive; they created constructivist learning environment at medium level; that result support the present result of the study. Though the differences of attitude in various topics

can be seen with respect to the location school (urban and rural), but in this study, it was found that this variable had no such influence over the teachers in creating significantly different attitude towards constructivist approach in teaching learning. A gender wise difference in attitude towards constructivist approach in teaching-learning was also not found in this study. A flexible teacher has high self efficacy and he tries harder to improve his students' learning and it is an important factor for a teacher to improve his teaching process. In the present study, an interesting observation was held that teachers' self efficacy was significantly different with respect to location of school (urban and rural). Urban school teachers' self efficacy level is higher than rural school's teachers. Urban Socio-economic background, cultural settings in urban and rural region may play a crucial role in this regard. But no significant gender influence was found in determining the difference in self efficacy of teachers. The study also reveals that significant and nearly moderate positive correlation existed between teachers' attitude towards constructivist approach in teaching-learning and teacher self efficacy that means self efficacy can play crucial role for construction of teachers' positive attitude towards constructivist approach in teaching-learning process which support the findings of Evrekli et al. (2010) also.

### ***Educational Implication of the Study***

The present study deems to hold some specific significance in modern education discipline in general and in the field of teacher education. This study is an endeavor to understand how a teacher presents himself in his classroom. In addition, how the teacher relates himself to the students' experience in the class. This study may be helpful to the teachers or administrators to consider the situations so that self-efficacy of teachers can be enhanced for better development of attitude towards constructivist approach and in turn they adopt necessary action for better scaffolding and thereby adopt new teaching strategy in classroom teaching.

### ***Conclusion***

The idea of constructivism, though the term may seem to be new to Indian minds, was not unknown in India from time immemorial, of course if we keep many references to Upanishadic pedagogy in mind. Swami Vivekananda echoed almost the same idea when he defined education as a process of manifestation of the perfection already in human mind. Professor Gardner, almost two decades back foresaw that there have been ongoing calls for constructivist classroom based on the constructivist views of learning during the past decade (Gardner, 1991). The reason of such advocacy of the constructivist approach was proved to

be showing a better way of teaching and learning in the West and the researchers as well as teachers noted persistent shortfalls in learners' understanding and of passive way of learning across all ages and grades in the traditional paradigm of teaching. This study leads an important decision that the students of urban and rural area or the students of girls' / boys' / co-ed school would experience nearly similar attitude for action of scaffolding by their teachers in classroom for constructing knowledge by themselves. If the differences in self efficacy of among teachers (with respect to location of school) are minimized, and the self efficacy are enhanced, students may come across better classroom environment to be created their respected teachers for construction of knowledge. The findings of this study showed that the teachers may theoretically well adept in constructivism but yet to take firm position (by developing high attitude) for translating constructivist vision into practice in real classroom situation. Hence, it may be suggested that teachers, educators and researchers are to be jointly and actively engaged and put hands together for exploring constructivist approach in the classroom so that teaching-learning can be made a real success by maximizing the learning outcomes of the learners. In this regard proper steps to increase self-efficacy of the teacher are also required because, teachers with high self-efficacy are more prone to adopt constructivist approach in their teaching learning process in formal educational system.

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## Attitude towards Teaching Profession of Trainee Science Teachers in Relation to their Understanding of the Nature of Science

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### Abstract

*Attitude towards teaching profession of trainee science teachers has been selected as focal theme of the present study. Their understanding of seven different aspects of the nature of science (NOS) was selected as the independent variables. The study aimed at particularly to investigate interrelationship of attitude towards teaching with trainee science teachers' understanding of each of these aspects of NOS at the bivariate level, using the coefficients of correlation. The relationship in the multivariate perspective has also been investigated considering attitude towards teaching as the criterion variable, and each of these understandings as the predictor variable. For this purpose, the multivariate regression analysis and the subsequent step-wise regression analysis were used. Six hundred trainee science teachers (undergoing teacher education courses in various teacher education institutions) were selected as sample. Their attitude toward teaching profession and understanding of various aspects of NOS were assessed using standardized tools. The results indicated that teachers' understanding that 'scientific knowledge is tentative', 'scientific observation is theory laden', 'there lies multiplicity in scientific methods', and 'imagination in science is important' - are strong and positively correlated with their attitude towards teaching. These four understandings were also found to be strong predictors for the criterion. Results also indicated that teachers' understanding of the remaining three aspects of science were related fairly with attitude towards teaching (at bivariate level), but failed to predict the criterion strongly at the multivariate level.*

**Key Words:** *Nature of Science (NOS), Attitude towards Teaching Profession, Teachers' understanding of NOS.*

### Introduction

In the context of the revolution of science and technology, knowledge of science has become one of the major quality parameters of an individual living in the modern society. This gradually increases the importance of science education in general, and a quality science teaching in particular (McComas, 1998). Science educators have identified various teaching behaviors essential for quality science

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teaching. Among these, attitude towards the profession is an important one (Chen, 2006). Attitude is the mental predispositions or tendencies to respond positively or negatively toward a certain thing, such as persons, events, process etc. (McMillan, 2000). It is a tendency attributed to the individual and forms his beliefs, feelings, and also actions towards a psychological object (Ustuner et. al., 2006). In the present context of society, responsibility of teachers increases many folds (Sharma, 2003). Their role no longer remains confined to impart mere information; they need to be thorough professional, fully equipped with high academic standard, pedagogical and practical skills, ethical and moral values etc. (Lederman, 1992). They have to play multi-tasking roles. Their favorable attitude may develop their professional commitment ensuring the possibility of effective teaching. It is important particularly for the pre-service trainee teachers. They face several difficulties while dealing with the real field of profession. Their success of overcoming those difficulties depends strongly on their favorable attitude towards the profession (Sharma, 2003).

Not only attitude, teachers' proper understanding of the nature of the discipline to be taught has also been recognized as another quality parameter of a teacher (Abell and Lederman, 2007). Each subject is characterized by some intrinsic features. Proper understanding of these might enable a teacher to realize the right spirit of teaching the same. He can design the instruction accordingly which may result in learners' proper perception of the subject leading to a sustainable learning (Shulman, 1987). Particularly, in the field of teaching science, teachers' understanding of the nature of science (NOS) has been considered as the area of highest priority by the researchers (Lederman, 1992).

The nature of science (NOS) typically refers to "the values and assumptions inherent to science, scientific knowledge and/or the development of scientific knowledge" (Lederman *et. al*, 2002). In fact, NOS has a multidimensional construct and is defined operationally in a number of ways by different researchers. Chen (2006) has recognized the nature of science in terms of the seven components namely: tentativeness of scientific knowledge (subject to verification and reconceptualization), observation and inference, subjectivity and objectivity, creativity and rationality, social and cultural embeddedness, theories and laws, and scientific methods (Khalick and Lederman, 2000). Six different postulates of nature of scientific knowledge have also been identified (Rubba and Anderson, 1978) in this regard, according to which, scientific knowledge—1) provides people with many capabilities, but does not provide instruction on how to use them; 2) is a product of human intellect; 3) is never proven in the absolute and final sense; 4) tends toward simplicity but not to the exclusion of complexity; 5) is capable of public empirical test; and 6) is born out of an effort to understand the unity of nature.

Development of teachers' conceptions of the NOS, particularly has become a concern of science educators for several years (Khalick *et. al.* 1998). However, these studies have consistently shown teachers' several common misconceptions of science (Abell and Lederman, 2007). For example, researchers [Aikenhead and Ryan, 1992] used the Views on Science-Technology-Society (VOSTS) instrument to assess high school teachers' viewpoints on the epistemology of science. They found that majority of the teachers were "apparently influenced by a classic but erroneous notion that many discoveries occur by accident, a notion heralded in the media and by popular writers of the history of science" (p. 566). In another study, with a Likert-scale instrument Nature of Scientific Knowledge Scale (NSKS), another group of researchers (Rubba *et. al.*, 1996) identified that teachers even teaching high secondary students tended to be neutral toward the statement of "scientific theories and laws are true beyond a doubt". It was also reported (Khishfe and Khalick, 2002) that Emirate high school teachers held mixed understanding about the nature of science. The study suggested that cultural background influence teachers' views about the nature of science. In a separate study, it was also found that most Korean teachers had an absolutist/empirical perspective of the nature of science (Lin and Chen, 2002). Trainee teachers' misconceptions of the NOS remained unchanged over the year despite their participation in the project-based, hand-on science refresher course.

Discussion therefore reveals that attitude towards teaching profession of trainee science teachers and their proper understanding of the nature of science have been identified as two major quality indices of a science teacher; available studies also have reported that NOS misconceptions are prevalent among teachers. Questions arise in this context, whether these misconceptions influence quality of teaching behavior of trainee science teachers in any respect? Particularly, does trainee science teachers' attitude towards teaching have any significant relationship with their understanding of the nature of science? Present study is an active search of effective solution of this basic question.

### **Objectives**

In the present study, attitude towards teaching profession of trainee science teachers undergoing teacher education course were investigated in relation to their understanding of the nature of science. The multi dimensional construct of NOS (dimensions namely 'tentativeness of scientific knowledge'; 'theory laden nature of scientific observation'; 'multiplicity in scientific methods'; 'hierarchical relationship among theory, laws, and hypotheses in science'; 'importance of imagination in science', 'validation of scientific knowledge by science community', and 'subjectivity in the knowledge of science') (as per, Chen : 2006) has been considered for this purpose. Followings are the specific objectives of the study—

- To investigate whether attitude towards teaching profession of trainee science teachers is significantly related (at the bi variate level) with their understanding of various dimensions of the nature of science
- To investigate the relationship in the multivariate perspective-particularly how their understanding of these different dimensions of the nature of science predict their attitude towards teaching profession significantly.

### *Hypotheses*

H<sub>0</sub>1. There is no significant correlation between attitude towards teaching profession of trainee science teachers and their understanding of various dimensions of NOS.

H<sub>0</sub>2. Teachers' understanding of various dimensions of NOS cannot significantly predict their attitude towards teaching profession.

### *Method*

#### *Sample*

Six hundred trainee science teachers undergoing their teacher education courses in different teacher education institutions in the state West Bengal constituted the sample. It contained different groups as per gender (boys, girls), and habitat (urban, semi-urban).

#### *Operational Description of the variables*

*Teachers' Knowledge of the Nature of Science (NOS):* In the present study, NOS has been operationalized in terms of the following seven aspects (Chen, 2006), which are:

- i. Tentativeness of scientific knowledge (scientific knowledge is subject to change, and new knowledge may arise by refining the old knowledge according to new evidence or interpreting data from a new point of view.)
- ii. Nature of observation (observations in science may be affected by the observers' anticipation and preconceptions, i.e., observations are theory laden)
- iii. Scientific methods (scientists apply various methods in doing research in science, rather an unique and universal one)
- iv. Hypotheses, laws, and theories (a hypothesis refers to prediction of experimental results, a law implies expression of what has been happened and also prediction of what has not yet been observed, whereas a theory provides an explanation of phenomenon and associated laws)
- v. Imagination (Imagination is a source of innovation, which is used to generate new knowledge in science by scientists)

- vi. Validation of scientific knowledge (knowledge in science is validated by the science community in terms of the empirical results)
- vii. Subjectivity in science ( scientists' personal belief, value, intuition etc. play a vital role in science activities resulting in subjectivity in their observation, interpretation etc.)

*Attitude towards teaching profession:* In the line of Ahluwalia (1978), Attitude towards teaching has been operationalized in terms of the following abilities :

1. Professional commitment.
2. Attitude towards child centered practices.
3. Attitude towards educational process.
4. Attitude towards pupils.
5. Attitude towards teachers (peers)
6. Attitude towards classroom teaching.

#### *Tools used and Procedure*

- i. For measuring trainee teachers' understanding of NOS: The Views on Science and Education Questionnaire (Chen, 2006), was selected for this purpose. The Questionnaire has been designed to represent different philosophical, historical, and sociological aspects of science (seven different aspects altogether). Score of each individual participant on each of these seven aspects was considered separately.
- ii. For measuring attitude towards teaching profession, Teacher Attitude Inventory' (TAI) standardized by Ahluwalia, S.P. (1978) were used. It is a Likert instrument consisting of 90 items of 6 different sub scales. Each scale has 15 statements that pertain to a particular aspect of prospective and practicing teacher's professional attitudes, as referred in the section 4.2.2 of the present study.

#### *Results of Data Analyses*

Following steps were used for analyzing data:

Descriptive Analyses (Mean, Standard Deviation)

Coefficients of Correlation

Regression Analyses (Multiple Regression, Stepwise Regression). These are discussed step by step as follows:

#### *Descriptive Analysis (Mean, Standard Deviation)*

Mean and Standard Deviation (S.D) of the scores on each of the selected variables were estimated (in order to investigate sample primarily). These are presented in Table 1, as follows.



**Table 1 : Mean and Standard Deviation  
(S.D.) of Scores for Each of the Selected Variables (N=600)**

Variables		Mean	S.D.
Attitude Towards Teaching Profession		174.55	35.34
Understanding of various dimensions of NOS	Tentativeness of Scientific knowledge	46.28	9.41
	Nature of Observation	43.29	11.20
	Scientific Method	53.58	12.46
	Hypothesis, Law, Theory	47.31	10.07
	Imagination	45.54	9.78
	Validity of Scientific Knowledge	42.13	10.57
	Subjectivity in Scientific Knowledge	38.04	10.98

***Coefficients of correlation***

Coefficients of correlation of attitude towards teaching of trainee science teachers' with each of the other selected variables were computed using Pearson's product moment method. Coefficients were estimated over the entire sample. Following table (Table 2) shows the results.

**Table 2 : Coefficients of Correlation of  
Attitude Towards Teaching with other Variables (N=600)**

Variables	r
Attitude towards Teaching-Tentativeness of Scientific knowledge.	0.645**
Attitude towards Teaching-Nature of Observation	.0.469**
Attitude towards Teaching-Scientific Method	.0.388**
Attitude towards Teaching-Hypothesis, Law, Theory	0.165*
Attitude towards Teaching-Imagination	0.351**
Attitude towards teaching-Validity of Scientific Knowledge	0.149*
Attitude towards Teaching-Subjectivity in Scientific Knowledge	0.162*

\*\* - significant at 0.01 level, \*- significant at 0.05 level, N.S.-No Significance

Results reveal that all the coefficients are significant and positive. Coefficients are significant at 0.01 level in case of the correlation of attitude with teachers' understanding of the following aspects of science—that 'scientific knowledge

is tentative', 'scientific observation is theory laden', 'there is multiplicity in scientific methods', and 'importance of imagination'. Teachers' understanding of each of the remaining three aspects of science are found to be fairly (significant at 0.05 level) correlated with attitude towards teaching. In view of this result of significant coefficients of correlation, hypothesis H01 is rejected and the alternative hypothesis that 'attitude towards teaching profession of trainee science teachers is significantly correlated with their understanding of various dimensions of NOS' is accepted.

### Regression Analysis

Interrelationship of attitude towards teaching with the other selected variables at multivariate level is investigated by using multiple regression analysis considering the former as criteria variable and others as predictors. Stepwise regression analysis was also done subsequently. The regression analysis is used for investigating the level of prediction and degree of predictability of predictors for the criterion variable. Results are shown in the following tables (Tables 3, 4).

**Table 3 : Summary : Multiple Regression**

**Table 3A : Model Summary**

Mode 1	R	R-Square	Adjusted R-Square	Standard Error of Estimate	p
1.	0.760	0.577	0.556	11.697	0.000

**Table 3B : Regression Coefficients**

Model	Unstandardized Coefficients		Standard Coefficient	t	p
	B	Standard Error	Beta		
<i>Constant</i>	-30.543	10.956		-2.995	0.054
Tentativeness of Scientific knowledge	0.866	0.109	0.349	9.032	0.000
Nature of Observation	0.984	0.171	0.256	8.581	0.000
Scientific Method	0.474	0.115	0.136	3.543	0.001
Hypothesis, Law, Theory	0.352	0.177	0.084	2.220	0.057
Imagination	0.469	0.122	0.224	2.847	0.005
Validity of Scientific Knowledge	0.267	0.161	0.051	1.177	0.218
Subjectivity in Scientific Knowledge	0.301	0.129	0.068	2.138	0.031

Results of multivariate analysis (Table 3a, Table 3b) reveal that all the predictor variables significantly predict the criterion variable. Analyses of multiple regressions showed that regression model predicts 57.7 % of variance of scores of attitude towards teaching. Result of step-wise regression is shown in the following table (Table 4).

**Table 4 : Summary: Step-wise Regression**

Multiple Regression	Step+ in/-out	Multiple R	Multiple R <sup>2</sup>	R-square change	p-level
Tentativeness of Scientific knowledge	1	0.6016	0.3612	0.3612	0.0000
Nature of Observation	2	0.6880	0.4729	0.1117	0.0000
Scientific Method	3	0.7008	0.4911	0.0818	0.0000
Imagination	4	0.7400	0.5476	0.0565	0.0000
Hypothesis, Law, Theory	5	0.7540	0.5685	0.0109	0.0000
Validity of Scientific Knowledge	6	0.7580	0.5745	0.0060	0.0023
Subjectivity in Scientific Knowledge	7	0.7600	0.5776	0.0031	0.0031

Results of step-wise analyses showed that major % of the variance are explained by the variables namely-‘teachers’ understanding that scientific knowledge is tentative’, ‘scientific observation is theory laden’, ‘there is multiplicity in scientific methods’, and ‘importance of imagination’. Teachers’ understanding of the remaining three aspects of NOS are found to be significant factors, though of relatively of low strength. In view of this result of significant prediction of the criterion variable by the selected predictors, null hypothesis H02 was rejected and the alternative hypothesis that ‘understanding of various dimensions of NOS of trainee science teachers significantly predict their attitude towards teaching profession’ is accepted.

### ***Discussion of Results***

Results (Table 2, Table 3, Table 4) reveal that teachers’ understanding of some particular aspects of the nature of science (namely-tentativeness of scientific knowledge, nature of scientific observation, multiplicity in scientific methods, and importance of imagination) are found to be strongly related with their attitude towards teaching both at the bi-variate, as well as at multivariate level.

Understanding the feature that ‘scientific knowledge is tentative’ might enable a science teacher recognize that science is dynamic by nature. With this

realization, teacher may encourage students to verify scientific knowledge through proper observation, experimentation, and inference, which are three major skills of science learning. This understanding, thereby might increase teachers' level of professional commitment. 'Professional commitment' is one of the operational dimensions of the selected criterion, i.e. 'attitude towards teaching profession' (as discussed in section 4.2.2 of the present study). Therefore this explanation might throw sufficient light in favor of the strong association of this dimension of attitude (professional commitment) with the aspect of NOS (tentativeness of scientific knowledge), as referred.

With understanding the nature of scientific observation that 'observation may be affected by observer's anticipation' and also the knowledge that 'there is multiplicity in scientific methods', teacher will develop favorable attitude in accepting learners' points of view, in particular; and also attitude towards pupil in general. 'Attitude towards pupil' is another dimension of the criterion variable, as considered.

Teachers' recognition of the 'importance of learners' imagination' may ensure greater possibility of freedom in their teaching process. Science teaching in this way no longer will remain merely rule bound and mechanical. It rather will motivate students strongly by encouraging their spirit of scientific enquiry. As a consequence, students may be involved more deeply in learning science, in the same way as a scientist is deeply involved in exploring the underlying truth of nature. Learners may be more critically aware and attentive in their science classes. Understanding this aspect of science might develop teachers' attitude towards child centered practices in science class. 'Attitude towards child centered practices' is also considered one of the dimensions of the criterion variable.

Therefore, teachers' understanding of the referred aspects of NOS namely, tentativeness of scientific knowledge, nature of scientific observation, multiplicity in scientific methods, and importance of imagination may have strong association respectively with the dimensions, viz., professional commitment, attitude towards pupil, and attitude towards child centric practices of the criterion variable separately. This might also increase the possibility of strong prediction of the criterion variable, as a whole, by these predictors and account for the results, as obtained.

Results also reveal that the independent variables namely, teacher's understanding of subjectivity, way of validation of scientific knowledge by community, and, the nature of hierarchical relationship among hypothesis-law-theory are found to be the predictors of comparatively low strength (though significant) for the criterion. In the present study, attitude of trainee science

teachers undergoing training program (B.Ed course, useful for teaching in schools) was investigated. For teaching in schools, science teachers need to emphasize on learners' rational and logical thinking. Teachers' understanding of the acute difference among theory-law-hypothesis might not have its relevance for immature school learners. Acceptance of scientific knowledge by community refers to the cultural dimension of science, which may also be similarly irrelevant for this immature group. Probably on account of this, teachers' understanding of these particular critical aspects of NOS fail to predict strongly their attitude towards teaching (school teaching, in particular).

### **Conclusion**

Primary objective of the study was to investigate the relationship of attitude towards teaching with teachers' understanding of various dimensions of NOS. Results of the study revealed that understanding of all the selected seven aspects of scientific knowledge are significantly related with attitude. A number of these also are found to predict trainee science teachers' attitude towards teaching profession very strongly. Therefore a functional understanding of the NOS and proper implementation of it into action is clearly a prerequisite for the successful science teaching. Hence, it should be incorporated as an essential part of the curriculum of a teacher education program.

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## Career Choices of Secondary Students with Special Reference to Gender, Type of Stream and Parental Education

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### **Abstract**

*The study was carried out to find the career choices of students at secondary level. A sample of 200 students was drawn randomly from 12 secondary schools of district Srinagar within the age range of 16 plus. The selected sample comprised of arts and science streams. Chatterji's Non-Language Preference Record was administered to collect the data. Besides, parental education as one of the variables was also taken into consideration. Data was subjected to statistical treatment by applying percentages and 't' values. The results revealed some significant differences on the basis of gender and parental education in various career choices of the subjects under investigation.*

**Key Words :** *Career Choices; Secondary Students; Gender; Type of Stream; Parental Education.*

### **Introduction**

Appropriate choice of a career is reported to have received greater attention in the world of work (Kulshrestha, 1979). The modern society with its scientific and technological advancement, its division of labour and specialization of functions demand the fullest use of manpower at all levels. Our pressing need today is to harness and broaden the ways and means of proper utilization of manpower resources. Therefore, capacities and strengths require a proper direction. This will culminate into the fresh attempt towards research in career orientation with a view to understand the ways in which our teeming millions may choose their career (Mattoo and Sugra, 2007). This was realised some more than two decades ago when Government of India introduced 10+2+3 pattern of education in 1987. With the implementation of this system the students have to decide the main stream of education which they have to pursue after the completion of secondary education. Even the Kothari Education Commission (1964-66) observed that, "students are admitted to vocational courses unsyste-

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matically which results in the wastage of manpower and viz-a-viz. the expenditure earmarked on education. To overcome this malpractice, it is of paramount importance that right type of educational course/s be made available according to their aptitude and interest. It can be made possible if we initiate vocational guidance at school level which hitherto has been debated much but not implemented in letter and spirit.

Considerable amount of research has been carried out in the area of career education in India and abroad. A host of researchers have concentrated on a number of areas falling under cognitive, affective and demographical variables. Attempts have been made to study career choices of students in relation to intelligence, scholastic achievement and creativity (Habibollah, et al., 2010; Heinze, 2009; Ivcevic, 2007; Hamingthanzuala, 2001; Mattoo, 1994; Tulsi, 1985; Randhawa, 1977; Martin, 1975). Age, socio-economic status, type of institution and influence of parental education has also been the focus area (Jansari and Kumar, 1999; Anderson, 1993; Sujata, 1988; Yasmeen, 1985; Kumar, 1984; Mohan and Banth, 1975; Martin, 1975; Adams, 1974; Patel, 1967; Mowseian, Health and Rothney, 1966; Crites, 1962; Abhilashi, 1956; Bell, 1938). Locale, personality factors, gender has been the interest area of researchers (Jansari and Kumar, 1999; Panday, 1975; Pangotra, 1965). The results of these studies reveal that interests are dependent upon these variables. The gender differences have also been reported to exist. It has also been reported that dichotomies like rural and urban play a significant role in shaping the interest patterns of students. Karimi, (2000) observed that changes in interest patterns occur due to environment, social status and specific abilities. However, Mehta (1970) concluded that parental education significantly contributes the changes in the interest patterns of individuals. While scanning the existing findings, it is reported that the results are not in uniform direction. Therefore, further exploration is needed to arrive at definite conclusions.

### ***Need of the Study***

Ever since the initiative made by Parson (1908) with regard to the development of meaningful theories of occupational choices and the subsequent ways and means of devising tools for the assessment of abilities and interests. The focal idea seems to have been towards the proper placement and comparable considerations of individuals towards a particular job. This has given birth to the strategy of "*right job for right individual*" which resulted into career based education to our youth. Despite these initiatives our country could not achieve the objectives the way idea was conceived. However, efforts are being made to provide job oriented courses to our teeming millions so that the opportunities

of unemployment do not get closed. There has been a phenomenal growth in the establishment of vocational institutes throughout the country but while choosing the courses to be studied by the youth to start their career guidance services do not seem to exist. Youth carry on their programmes and at the end of the day their precious time is consumed at employment directorates to find a placement either way. It sometimes culminates into the placement of square pegs into round wholes. Another core barrier in the career awareness channels goes to parents who seem to be reluctant in misdirecting their wards in the selection of career choices. Their intervention in most of the cases is responsible to guide their children in their own way and according to their own interest. Sometimes a parent is determined to put his child in a medical profession. On the other hand the other parent is ambitious to place his child in legal profession regardless of ignoring certain interests, aptitude and level of intelligence. With the result the youth are misled and misdirected and they cannot admit themselves with the academic activities in their colleges. Their mind is burdened with knowledge which is quite conflicting with their inborn urges, tendencies and the like (Ahluwalia, 1988). It is, therefore, of paramount importance that the Government authorities must provide a wide variety of structured programmes with occupational orientation in the curriculum instructions. This of course can stimulate career exploration among our youth with definite specialisation and will lead children to choose the best vocation that suits their aptitude. The present study is an attempt in this direction.

### ***Objectives***

Following objectives have been designed to carry the present investigation.

1. To find out the general pattern of career choices of secondary students.
2. To find and compare the career choices of students on the basis of gender.
3. To find and compare the career choices of students on the basis of the type of stream and
4. To find and compare the career choices of students on the basis of level of parental education.

### ***Hypotheses***

1. There shall be a significant difference between the mean scores of boys and girls on career choices.
2. Type of stream has a significant influence on the career choices of students.
3. Parental education has a significant influence on the career choices of students.

## Design of the Study

### Sample

A sample of 200 students (100 boys and 100 girls) was drawn from different secondary schools of Srinagar city (J&K). Twelve institutions participated in the investigation. The age of the subjects was 16 plus. The sample was drawn by using a purposive sampling technique.

### Tools

#### *Chatterji's Non-Language Preference Record*

This tool covers ten interest areas viz. a) Fine arts, b) Literary, c) Scientific, d) Medical, e) Agriculture, f) Technical, g) Crafts, h) Sports, i) Out door and j) House hold.

### Analysis of Data

The collected data was subjected to statistical analysis. Percentages Mean, SD, and t-Test of significance were calculated. The information is presented in the below mentioned tables with indexed abbreviations like: *Fine arts (FA)*; *Literary (LT)*; *Scientific (SC)*; *Medical, (MD)*; *Agriculture(AG)*; *Technical(TC)*; *Crafts (CR)*; *Outdoor(OD)*; *Sports(SP)* and *Household(HH)*.

**Table 1 : Showing the Distribution of Predominant Career Choices of Students (Percent wise, N=100, each gender)**

Gender	CAREER CHOICES									
	FA	LT	SC	MD	AG	TC	CR	OD	SP	HH
Male/s	3%	8%	19%	20%	4%	13%	7%	8%	13%	5%
Female/s	7%	10%	15%	23%	3%	9%	8%	6%	11%	8%

A perusal of table 1 reveals the predominant career choices of sample subjects on the basis of gender. The order of their career choice in preferential sequence in male subjects is found to be: Medical (20%), Scientific (19%), Technical (13%), Sports (13%), Literary (8%), Outdoor (8%), Crafts (7%), House hold (5%), Agriculture (4%) and Fine arts (3%). However, in case of females the order of vocational preference/s is reflected as: Medical (23%), Scientific (15%), Sports (11%), Literary (10%), Technical (9%), Crafts (8%), House hold (8), Fine arts (7%), Outdoor (6%) and Agriculture (3%). The results reveal that medical choice seems to be dominant in both the genders followed by scientific choice. Least preference seems towards fine arts by male subjects and agriculture by females.

**Table 2 : Showing the Significance of Differences between the mean Scores of Boys and Girls on Career Choices**

Career Choice	Gender (Boys)			Gender (Girls)			SED	t-value	Remarks
	Mean	SD	SEm	Mean	SD	SEm			
FA	24.33	4.55	0.46	26.17	5.40	0.54	0.71	2.592	@
LT	31.03	7.93	0.79	30.70	8.01	0.80	1.12	0.295	*
SC	32.64	7.49	0.75	33.72	7.86	0.79	1.09	0.991	*
MD	34.22	6.44	0.64	33.24	6.22	0.62	0.89	1.101	*
AG	19.33	4.60	0.46	19.23	4.41	0.46	0.65	0.154	*
TC	32.22	4.33	0.43	29.08	4.66	0.47	0.64	4.875	@
CR	27.33	4.66	0.47	29.31	4.44	0.45	0.65	3.046	@
OD	33.23	5.34	0.53	31.45	5.47	0.55	0.76	2.342	@
SP	23.34	4.56	0.46	24.68	4.78	0.48	0.66	2.030	@
HH	17.23	5.02	0.50	19.56	4.96	0.50	0.71	3.281	@

@ significant at 0.01 level \* not significant

The results presented in Table 2 reveal the significance of differences between the mean scores of boys and girls on vocational choice/s. The t-values in six vocational interest areas (fine arts,  $t = 2.592$ ; technical,  $t = 4.875$ ; crafts,  $t = 3.046$ ; out door,  $t = 2.342$ ; sports,  $t = 2.030$ ; household,  $t = 3.281$ ) are reported to be significant at 0.01 and 0.05 level/s of confidence and in rest of the areas the differences failed to arrive at any level of confidence. From these results it is revealed that boys are inclined towards technical ( $M = 32.22$ ) and outdoor interests ( $M = 33.23$ ) than girls. However, girls are reported to be higher in fine arts ( $M = 26.17$ ), crafts (29.31), sports ( $M = 24.68$ ) and household interest ( $M = 19.56$ ) areas. Gender differences could not be established between boys and girls on literary, scientific, medical, and agriculture interests. It can be inferred that both the groups of students have inclination towards these areas to an equal extend. The results are in agreement with some of the studies carried earlier in the field (Nazima, 2009; Sugra, 2007; Mir, 1996; Porus, 1987; Raina, 1987; Rawal, 1984; Yadav, 1983; Kulshrestha, 1979; Sidhama, 1977; Vohra, 1977; Mathur, 1975).

**Table 3: Showing the Significance of Differences between the mean Scores of Students with Stream Option on Career Choices (N=100 each)**

Career Choice	Arts Stream			Science Stream			SED	t-value	Remarks
	Mean	SD	SEm	Mean	SD	SEm			
FA	29.33	4.35	0.44	26.14	4.40	0.44	0.623	5.120	@
LT	31.13	7.83	0.78	32.70	6.01	0.60	0.984	1.595	*
SC	32.04	7.44	0.74	34.72	7.76	0.78	1.075	2.493	@
MD	33.44	4.76	0.48	32.88	4.40	0.44	0.651	0.860	*
AG	19.33	4.88	0.49	22.33	4.44	0.44	0.659	4.552	@
TC	22.37	5.44	0.54	24.44	5.55	0.56	0.778	1.404	*
CR	29.34	5.42	0.54	28.58	6.70	0.67	0.861	0.883	*
OD	31.32	5.66	0.57	32.64	5.98	0.60	0.828	1.594	*
SP	23.44	4.56	0.46	24.44	5.22	0.52	0.694	1.441	*
HH	17.23	4.67	0.47	16.66	4.99	0.50	0.686	0.831	*

@ significant at 0.01 level    \*not significant

A perusal of Table 3 reveals significance of differences between the mean scores of students in their career choices on the basis of subject preference. It is observed that subjects from science stream had significantly higher choice in scientific and agriculture fields than the subjects from arts streams. The obtained t value/s have been found to be significant at 0.01 level of confidence in fine arts ( $t = 5.120$ ), scientific ( $t = 2.493$ ) and agriculture ( $t = 4.552$ ) areas. Besides, subjects from arts stream are reported to have higher leaning towards fine arts ( $M = 29.33$ ) than the subjects from science streams ( $M=26.14$ ). However, the mean differences between the subjects under investigation failed to arrive at any level of confidence in literary, medical, technical, crafts, outdoor, sports and household areas of career choices. It can be inferred that stream option does not intervene the subjects to change their tendency in some of the career choices. The results are supported by some of the findings carried out earlier (Jamseeda, 2010; Mattoo and Nazima, 2010; Sugra, 2007; Rawal, 1984; Cervenka, 1977; Kellarikova, 1974).

**Table 4 : Showing the Significance of Differences between the mean Scores of Students with the Level of Parental Education on Career Choices**

Career Choice	Children of Graduates			Children of Professionals			SED	t-value	Remarks
	Mean	SD	SEm	Mean	SD	SEm			
FA	25.34	4.53	0.45	26.14	4.40	0.44	0.630	1.270	*
LT	31.03	7.83	0.77	30.70	8.21	0.82	1.125	0.423	*
SC	32.66	7.39	0.74	35.72	7.76	0.78	1.075	1.032	*
MD	34.56	6.76	0.68	35.67	6.77	0.68	0.961	1.150	*
AG	19.55	5.69	0.57	23.24	5.89	0.59	0.820	4.500	@
TC	21.34	5.33	0.53	26.44	5.44	0.55	0.764	6.675	@
CR	28.44	5.33	0.53	29.55	4.98	0.50	0.729	1.523	*
OD	30.45	6.02	0.60	27.43	4.66	0.47	0.762	3.974	@
SP	23.77	5.66	0.57	24.55	5.89	0.59	0.673	1.159	*
HH	18.33	4.76	0.48	19.45	4.66	0.47	0.67	1.672	*

@ significant at 0.01 level \* not significant

A close examination of table 4.00 (Fig. 4) reveals the significance of differences between the mean scores of the subjects in their career choices on the basis of parental education. Children of professionals are seen to have greater inclination towards agricultural ( $M = 23.24$ ,  $t = 4.500$ ) and technical interest ( $M = 26.44$ ,  $t = 6.675$ ) than the children of graduates. The calculated t-values are significant at 0.01 level of confidence. In the same table outdoor interest seems to be higher in case of the children of graduates ( $M = 30.45$ ,  $t = 3.974$ ) than the children of professionals ( $M = 27.43$ ). Fine arts, literary, scientific, medical, crafts, sports and household as career choices could not differentiate these subjects on the basis of parental education. It can be inferred that both the groups have similar tendency/leaning towards these choices. The results are in conformity with the studies carried out by other researchers (Mattoo and Nazima, 2010; Jamseeda, 2010; Naiema, 2008 Yasmeen, 1985).

## Conclusion

The study is concluded with the following observations

- i) The most liked career choice has been reported to be medical followed by scientific and sports.
- ii) Girls are seen to have higher inclination towards fine arts, crafts, household and sports activities as compared to boys. Technical and outdoor interest is found higher in boys than girls.
- iii) Uniform tendency towards career choices like: literary, medical, scientific, and agriculture is found in both the genders.
- iv) Type of stream (arts vs. science) could not make any difference in the career choices like: literary, medical, technical, crafts, sports and household. However, students from science stream have exhibited higher inclination towards agriculture and scientific choices than arts students. Fine arts as a career choice is reported to be higher among students belonging to arts stream.
- v) Parental education could not make any significant difference in some of the career choices viz. fine arts, literary, scientific, medical, outdoor, sports and household. However, agriculture, and technical choices are seen to be higher among the children of professionals.

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## Click and Learn : An Interactive Learner Control On-Screen Approach for Student with Hearing Impairment

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### Abstract

*Interactive self-paced learning technologies and applications are probably one of the most exciting innovations in the age of information revolution. Specifically, the study was designed to determine which method of learning (interactive versus traditional) is more effective in facilitating student achievement of different educational objectives. In order to measure students different learning objective (factual, conceptual and rules and principle) a sign language based interactive learning module, three criterion tests and a Computer proficiency test was developed. The sample involved in the study consisted of 120 students from different Secondary schools of West-Bengal. For matching the samples each student completed a GIS (general information schedule), computer proficiency test and a prior knowledge test on geography. The finding of MANOVA result shows significant effect of Interactive Instructional Visualization Method and Traditional Method of Instruction on the Learning of students of various Educational Objectives. The students with hearing impairment who were instructed by Computer based Instructional Method performed well than those instructed by traditional method of instruction.*

**Key Words :** *Instructional Visualization Method, Learning, Traditional Method, Hearing Impaired, Computer Based Method*

### Introduction

Advancement of technology has been changing our everyday life and formulates our life as easiest as possible. The utmost contribution of technology is invention

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of computer and its multi-task nature and its use in teaching learning. Now on the verge of 21st century computer is our reality and one of the important component in our life which cannot be overlooked (Guemide & Benachaiba, 2012). World-wide there is 600 million people with disabilities, who have equal right to obtain benefits from this technological advancement like other typical populace (UN Report, 2003). If we explore present status of HI people we initiate that approximately there are 600 million people with disabilities in the world out of which around three quarters are from developing and poor including India (UN Report, 2003). However, children with hearing impairment are one of the major populations groups of these. In India there is no formal census, consequently accurate number of deaf Indians are not currently available. Zeshan (2007a) has obtained some estimated statistics, where we found that 2 people in every thousands of the population are estimated to be deaf and 10 people in every thousand are estimated to be hard of hearing (HOH). Sahasrabudhe (2010) draws an estimated number of people with a hearing loss from a large scale World Health Organization survey, which estimates the figure to be an average of 6% of the population. According to Sahasrabudhe (2010), "applying this to the current estimated population of India, this means that there are approximately 70.4 million deaf and hard of hearing people living in India (cited from Denmark, 2012). HI in India still cannot fully access education and another distressing situation is that they were still considered inferior (Dennis, 2005).

Research documents that individuals with hearing impairment (HI) have the same mental capacity as the typical hearing students in terms of their intelligence level (Schwartz, 2002). Schwartz, (2002) also provide a conception that the term "Hearing Impaired" (HI) is used to provide description that this type of students are only deficient in their hearing capability and not in their intelligence level. However, simultaneously we found another view in different researches that a huge number (80%) of people with hearing impairment cannot actively engage in education or are illiterate or Semi-literate (WFD, 2003). From these two different views we found that students with HI have same mental capacity and same intelligence level but still a huge number of students with HI cannot get benefits from their education system. Hashim, et, al (2013) says that "problem could occur for the students with HI if the technique used by the teachers or instructors in teaching them is as the same used for typical hearing students". From this point of view arises a need for different instructional approach especially for students with HI through computer based self-paced instructional approach which can create an appropriate learning environment for students with HI and they can access instruction at their own pace (Berndsen & Luckner, 2010). Although there is the worldwide slogan for 'education for all' by various educators and researchers and Indian constitution

also specify that education for people with disabilities is the “fundamental right” beside this “free and compulsory education” secured for all children but they were not listed under & thus deaf people still have not benefited from this (Verma, 1999). Furthermore, education in specialist schools is limited by an insufficient number of schools and inadequate teacher training (Dennis, 2005). To conquer the above situation numerous study suggest that for Student with hearing impairment teaching learning their must introduce a new kind of instructional material that differ from most commercially prepared materials designed for the information processing needs of normally hearing students (Diebold, 1988).

Various researches revealed that while comparing instruction through traditional lecture based and interactive instruction method the learner performed better in terms of test scores in the interactive instruction method (Kamat & Shinde, 2009). Researcher also found that how interactive visualization or multimedia based learning environments are more effective than other such as conventional teaching approach. From their explanation it was found multimedia based learning environment is an essential tool by which instruction can be delivered to the learner in a variety of ways in a flexible manner (Alessi and Trollip 2001). Some scientific novel strategies, such as using technology to deliver text, video, animation and interactivity can be added to traditional text-based material to make it more effectively attentive to students and thereby improving their learning and achievement and thus providing benefits to learner (Kalyuga, 2007). Anglin et al (2004) in his research support that human beings remember pictures better than words. Comparing with traditional method of instruction interactive visualization has unique characteristic such as simulation, it helps the learner to control, learn on his own pace and manipulate on screen content. Different research on interactive visualization found high degree of control over the representation of the information which facilitates comprehension (Garget al. 2001; Harman et al. 1999; James et al. 2002) and manipulation of the content of visualizations which may foster higher level thinking such as conceptual reasoning and hypothesis generating and testing (Stieff and Wilensky 2003; Wu et al. 2001; Said, 2007).

Worldwide different researcher shows that visual or multimedia based learning environment can be beneficial for HI learner. Loeterman, Paul, and Donahue (2002) in his research developed a multimedia educational software with 32 deaf and hard of hearing children 6–12 years old and enhanced students’ word identification, knowledge acquisition, and story comprehension. They have used hypertext story where students can click text for further information also there is American Sign Language (ASL) video story corresponding the text and

additional different interactive functions for enhancing student active participation for story. Result indicates that student's in depth knowledge of word improved. Lang and Steely (2003) in his research presented multimedia based content material for HI learner consisted lessons "triads," with screen text, animation corresponding text and ASL version text. Result indicates that the students who used multimedia materials gained significantly greater knowledge than conventional teacher based instruction. Gentry, Chinn, and Moulton (2004/2005) in his research with 28 deaf students of age group ranging from 9-18 years presented visual multimedia based text with four format and indicated significant results. Reading comprehension of the students was better when content presented with multimedia based text with pictures format. Yoong and Kim (2011) in his research present multimedia based caption with sign-language based video on 66 adult student with HI to find out the effectiveness of comprehension, cognitive load, and motivation in online learning when caption correspondence with sign-language. Result found that there was a significance difference in content comprehension but no significance difference found in cognitive load and motivation. Furthermore, different research explores the effectiveness of adjunct sign representation for deaf learner. Adjunct sign representation refers association between text and graphic sign representation with text as used in this study material. In another research Wilson and Hyde (1997) conducted with 8-13 years old deaf children & found that use of sign language picture with text increased learning for poor reader and students recalled story sequence more correctly. Stiuson, Stuckless, Henderson, and Miller (1998) found deaf college student's understanding gained when use real time caption than interpreting. Majority of research findings in adjunct sign-representation used printed paper based content material.

However in spite of various researches in the developed countries there is still limited exploration in this area in the developing countries including India as students on average rarely use technological aids in the classroom and most still solely depend on the traditional oral approach in teaching-learning. The present research aims to find out the effectiveness of interactive sign-language based instructional visualization (ISLIV) for an inclusive set up especially for student with hearing impairment.

### ***Objective***

To investigate the effect of interactive sign language based instructional visualization when compared with traditional instructional method on the HI student's learning of educational objectives (factual, conceptual, and rules and principles knowledge).

### ***Sample***

Data was collected from 120 students (60 males and 60 females) with hearing impairment through purposive sampling selected from various special schools for hearing impairment in and around Kolkata. Their age ranged between 12-15 years (mean age 14.26 years and  $SD= 2.75$ ). The students were matched on the following criteria:

- Hearing loss greater or equal to 90 db (from school administration record).
- Only hearing impaired and no other disability.
- Used ISL as their first language and sufficiently fluent in reading text comprehension.
- Scored 5 or greater in computer proficiency test developed by the researchers.

### ***Research Tools***

- ***General Information Schedule:***

General Information Schedule comprised of student demographic information and Socio economic status (Parental education, income and occupation).

- ***Computer Proficiency Test:***

Computer proficiency test was prepared for initial screening to measure student's ability to use computer and to be able to operate the multimedia courseware in the study. The test consisted of total 10 items measuring 3 dimensions namely; basic knowledge of computer (4 items), usability of computer (3 items) and use of computer (3 items). Cronbach's alpha reliability of the test was 0.69.

- ***Prior Knowledge Test (pre-test as covariate):***

The Prior Knowledge test was developed by researcher consisting of 10 multiple-choice questions on the subject Geography on the topic-Solar System. The Cronbach's alpha reliability of the test was 0.65 ( $N=120$ ). The test score was analysed to investigate the initial differences among the treatment groups on their prior knowledge generally related to the content of the material used in the study and finally entered into analysis to adjust for its effect on the students' performance on the criterion post-tests.

- ***Criterion Measures Test (post-tests) Criterion Measures Test (post-tests):***

The three criterion tests-identification test, terminology test and comprehension test was developed by researchers based on the principles of Bloom (1956) to measure different learning objectives-factual knowledge,

conceptual knowledge and knowledge of rules and principle. Each sub tests consists of ten multiple-choice questions. There was no time limit for test completion. Each test item was worth 1 point for a total of 10 possible points per test.

- *Identification Test :*

Identification test is developed to measures student's factual knowledge as basic to specific disciplines (Anderson, L.W., et al, 2001). Reliability of Identification test is found to be 0.65.

- *Terminology Test :*

Conceptual knowledge refers to student's ability to answer groups of objects, events, or symbols all that share some common characteristics and that are identified by the same name. Reliability of Terminology test is found to be 0.70.

- *Comprehension Test:*

Student's rules and principle knowledge measures cause-and-effect or correlation relationships that are used to interpret events or circumstances. Reliability of Terminology test is found to be 0.77.

### ***Instructional Modules:***

For the purpose of the study, the instructional content, originally presented in print material, was developed into an Interactive Sign Language based Instructional Visualization (ISLIV) module on the subject Geography. Formulation of a need specific instructional material is the most important component while designing an instructional material.

The self-paced, computer based instruction used in this study was developed by the researchers on the Subject-Geography on the topic-Solar System. This content was chosen as it allows evaluation of different levels of learning objectives. The content was divided into main five sections: (a) The Solar System, (b) The Sun, (c) The Planets, (d) The Moon and (e) The Earth. The CBI based module consisted of 1 frame of direction and 13 frames of instructions. Frame 1 informed the learners' purpose of the material and directed them to pay attention to both verbal and visual information. Frame 2 to 14 introduced the 5 main content materials. After every frame there was a learner control interactive learning frame. In this frame student can control, interact and actively take part with every material.

The software packages used to develop the interactive module includes Adobe Photo-Shop CS3, Macromedia Flash CS3; Swish max 5, 3D canvas, 3D Max, Animo 5, Goldshell Digital Media, FlaX.v5 and Mix-FX v1.04. The

content for each unit was presented in different frames with sign language video in the right side of every frame. All instructional frames were presented with the title of each unit on top of the screen. In the bottom was next, back and home button that allowed learner to go back or move forward or go to the home page within the instructional module. The column on the very left side was a navigation bar frame so that the student can learn any frame according to his/her wish. At the right side of frame was sign-language video developed with assistance from expert and special educators for each topic. These visuals were designed to complement the text to their left.

### ***Reliability and Validity of all three criterion tests***

The Cronbach alpha result indicated high reliability for the three criterion tests (0.65 for Identification test, 0.70 for Terminology test and 0.77 for Comprehension test). All the tests (computer proficiency test, prior knowledge test and three criterion test) were validated by a panel of experts including a special education teacher, professional visual designer who has been offering visual design classes and subject experts in geography.

### ***Instructional Condition and Procedure***

After selecting 120 participants, all were provided a solar system prior knowledge test. All students were randomly assigned in two groups by lottery method. After creating groups (60 for each group) they were sent to two different classrooms. Two classroom environments were quiet with sufficient light and also the two groups were familiar with the classrooms environment/setting. In traditional method of instruction students were seated as they desired and each student was provided a printed paper based on the content material (solar system) similar to as provided by interactive instructional method on screen. In another classroom students were taught by interactive sign language based instruction. Content materials were same having one instructional screen and students were instructed to read instruction carefully and if they face any problem about function of any screen they can ask the instructor. In two instructional conditions there was no time limit. After completing instruction in two conditions the two groups were provided paper based three criterion measurement tests (identification, terminology and comprehension).

### ***Result***

Covariate Data Analysis: Prior Knowledge Test on Solar system

A variance of analysis was conducted on the solar system test scores to determine if there was a significant difference among the treatment groups on the topic.

**Table 1 : ANOVA result for tests between-subjects effects  
(prior knowledge test and three criterion tests)**

Source	Sum of Squares	df	Mean Square	F	Sig.
*Identification + *Terminology + *Comprehension	20.50	8	2.56	1.46	0.20
Note- * indicating each of the criterion tests contains 20 items.					

The result of the ANOVA analysis indicated that there were no significant differences among the treatment groups on the test (Table 1) score  $F(8/139) = 1.46$ ,  $p = .20$ . The result indicated that the participants were approximately equal in their prior knowledge on the content material and therefore any results of treatment effects would not be attributed to the difference in participants' prior knowledge.

### **Results of MANOVA**

As more than one dependent variable was used in conjunction with the independent variable, a multivariate analysis of variance (MANOVA) was conducted to analyze the effect of interactive sign language based instructional visualization and traditional instruction method on hearing impaired students' learning of educational objectives (overall effect i.e., factual, conceptual, and knowledge of rules and principles) through computer based Instruction mode. SPSS for Windows was used for the analyses and the criterion alpha level (0.05) was used for verifying statistical significance. For MANOVA, the effect size was reported as partial eta squared ( $\eta^2$ ) and is used as an estimate of variance in the dependent variables. The effect size maybe interpreted according to the following guidelines provided by Cohen (1988) :  $\eta^2 = 0.01$  is small,  $\eta^2 = 0.05$  is medium and  $\eta^2 = 0.13$  is large.

**Table 2 : MANCOVA results using pallai's trace & wilks' lambda for all criterion tests (identification, terminology & comprehension test)**

Effect	Tests	Value	F	Sig.	$\eta^2$
Methods of Instruction	Wilks' Lambda	0.12	6.36	0.00**	0.12
Note— ** Mean difference significance at the 0.05 level					

Multivariate effect (Table 2) for interactive sign-language based instruction and traditional instructional was significant with Wilks'  $\lambda = 0.87$ ,  $F = 6.36$ ,  $\eta^2 < .05$ ,  $\eta^2 = 0.12$ . The overall MANOVA Wilks'  $\lambda$  value was statistically significant at the 0.05 alpha level, Following Huck's recommendation (Huck, 2004) regarding significance, subsequent exploratory analysis was conducted to further examine the differences. The results of the exploratory follow-up analysis using MANOVA are presented in Table 3.

**Table 3 : Represents analyses results of between-subjects effects**

Effect	Dependent Variable	F	Sig.	$\eta^2$	Observed power
Methods of Instruction	Identification	13.77	0.00**	0.09	0.95
	Terminology	8.55	0.00**	0.05	0.82
	Comprehension	4.84	0.02**	0.03	0.58
Note- ** Mean difference significance at the 0.05 level					

Subsequent univariate tests or exploratory follow-up analysis using MANOVA (Table 3) indicated that different methods of learning had a significant effect on three Criterion tests (Identification test  $F(1/139) = 13.77$ ,  $p = .00 < 0.05$ ,  $\eta^2 = 0.09$ , Terminology test  $F(1/139) = 8.55$ ,  $p = 0.004 < 0.05$ ,  $\eta^2 = 0.05$ , Comprehension test  $F(1/139) = 4.84$ ,  $p = 0.02 < 0.05$ ,  $\eta^2 = 0.03$ ). To further identify the differences, follow-up pairwise comparisons were examined. Table 4 presents the adjusted means and standard errors for methods of learning, and Table 5 for means and standard deviations for the three criterion tests by Methods of instruction.

**Table. 4 : Adjusted Means and Standard Errors for Methods of Instruction**

Dependent variable	Methods	Adj. mean	Std. error	95% confidence interval	
				Lower	Upper
Identification	Traditional	4.55	0.18	4.18	4.92
	Interactive	5.54	0.18	5.17	5.91
Terminology	Traditional	4.92	0.18	4.56	5.29
	Interactive	5.68	0.18	5.32	6.04
Comprehension	Traditional	5.07	0.21	4.65	5.48
	Interactive	5.72	0.21	5.31	6.14

**Table 5 : Means and standard deviations for the three criterion tests by methods of instruction**

Methods	Tests	Identification	Terminology	Comprehension
Traditional	Mean	4.56	4.93	5.07
	SD	1.57	1.43	1.77
	N	70	70	70
Interactive	Mean	5.54	5.69	5.73
	SD	1.56	1.62	1.76
	N	70	70	70

**Table 6 : Summary of results- Methods of learning with respect to the criterion tests (identification, terminology, comprehension)**

Dependent variable	Interactive	Traditional	Result/Effect	Sig.
Identification	Mean (5.54)	Mean (4.56)	I > T	0.00**
	SD (1.56)	SD (1.43)		
Terminology	Mean (5.69)	Mean (4.93)	I > T	0.00**
	SD (1.62)	Mean (1.43)		
Comprehension	Mean (5.73)	Mean (5.07)	I > T	0.02**
	SD (1.76)	SD (1.77)		
Note- ** Mean difference significantat the 0.05 level				

**Discussion**

The initial findings of the study suggested the superiority of interactive sign-language based instructional method compared to traditional lecture based instruction for HI learner to achieve different knowledge domain such as factual, conceptual and rules and principle. Students receiving the interactive sign-language based instructional treatment outperformed significantly on all three criterion tests (identification, terminology and comprehension) than those who received instruction in the traditional method. The result are supported by previous researches that multimedia based instruction are effective than conventional teacher based instruction (Lang and Steely, 2003; Mayer, 2003).

In India in majority of deaf school teacher performs all the teaching activities and the students are just passive viewers and audience and teacher instruct each and every sequence through continuous process where students verbal and pictorial channel are overloaded by essential processing demand (Mayer, 2005a). The results are also supported by previous result that found high degree of control over the representation of the information which facilitates comprehension (Garget al.2001; Harman et al.1999; James et al.2002). In learner control instruction learner has the time and capacity to organize and integrate the selected words and images (Mayer, 2005b). Earlier results also show that interactivity would promote surface-level processing and therefore increase recall of students' factual knowledge of the instructional material (Kennedy, 2004). Interactive instruction also allowed students to manipulate and control diagrams and repeat animations and promote deep-level processing of the material being taught, resulting in significantly improved comprehension and gain ability to find out cause and effect relationship of content material (solar system). The present study empirically supports the theories of Tversky and Morrison (2002) and Kennedy (2004) by showing that comprehension of concepts about any mechanical systems that can be increased by engaging students with the subject matter through interactive diagrams and the behavior of manipulating and controlling the diagrams.

### ***Significance and further applicability of the Study***

Findings of the present study establish the fact that the learner should no longer be viewed as a passive recipient of instruction. Instead, the learner is an active participant in the learning process who is actively engaged in receiving, processing, and organizing information, and who can actively constructs meaning from instruction. Therefore, it poses a continuing challenge for the teachers and also the instructional designers to design instructions that facilitate learners' meaningful interaction with the content and processing of information (Banna-Ritland & Grabowski, 2002).

This research partly explains the need of creating interactive sign language based instructional strategies by the instructional design practitioners in a heterogeneous class. The results of this study shed light on these questions discussed above and provide information to instructional designers and educators in the decision-making process of using interactive sign-language based instruction for hearing impaired student in CBI environment. In addition to answering a current need in education, this research study also provides important data to establish empirical justification for whether to use interactive visualization in the teaching and learning process of the student with hearing impairment. As proposed Easterbrooks & Baker (2002) that differentiated

instruction and universal design for learning are challenging approaches, given that deaf and hard of hearing students constitute a heterogeneous school population with diverse language needs. From this point of view this research provides empirical evidence that properly designed interactive visualization is effective for learner with HI.

In the western countries, little empirical research exists which examines the instructional effectiveness of interactive sign-language based instruction for student with hearing impairment. In India, however, not much research or meta-analysis has been conducted in this field. In India, most topics in curriculum are mainly taught with conventional educational tools—textbooks, lectures, and laboratories etc. This research focused on the need of interactive self-pacing teaching environment and the findings have important implication for an inclusive classroom where education is for all and where each student can learn according to their own pace and ability.

### Conclusion

In this study, an interactive learning module with sign-language is developed for students with hearing impairment to evaluate the impact of interactive learning on students' different (factual, conceptual, rules and principal) learning compared with traditional lecture based method. As explained in the paper, and despite the fact that statistical results showed improvements in students learning, however, this is not a proposal for replacement of traditional method of instruction, rather, interactive sign-language based instruction can provide a very useful alternative for traditional education especially in cases where there is scarcity of sufficient sign-language expert teacher or where traditional method is not applicable. It is also applicable for teaching student with hearing impairment in the main-stream classroom to create an inclusive educational environment.

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## **Developing a Test for Measuring Oral Competence in English of the Secondary level Students in Bengali Medium Schools of West Bengal**

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*Anupama Chakrabarti\**

### **Abstract**

This paper describes the process of developing an English oral communicative competence test comprising a Semi-structured Personal Oral Interview and a Picture-cued Story-telling task. Keeping in view the social situation of West Bengal, the items for the interview are framed. The pictures for the story-telling task are taken from 'Assessing Speaking' (by Luoma Sari, 2004, p. 141). The test is administered twice, within a gap of two months, on 21 students of Class X. The test rubrics are based on the actual performance of the examinees. The reliability of the test, measured through test-retest method, is found to be very high. Validity of the test is established on the fact that the both the test items and the rubrics are planned on the basis of input by the subject experts who are also experienced teacher educators of English method subject. The test, thus constructed, is fit to be used for measuring secondary level students' oral communicative competence.

**Key Words :** Communicative Competence, Semi-structured Personal Oral Interview, Picture-cued Story-telling task, Linguistic competences and Discourse competences

### **Introduction**

English, the language of the British colonizers who left India nearly seventy years ago, still prevails in the country, plays a dominating role in the elite society and enjoys the position of associate official language (along with the regional languages of the country). Internationally, too, English is an important medium of communication. Economic and cultural globalization necessitates the use of a language through which majority of the world population can be reached. English is that language. If the first language speaking population and second language speaking population are added English speaking population stands second only to the Mandarin Chinese speaking population. Geographically also it is widely distributed in 115 countries whereas Mandarin is spoken by people

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in five countries only [Source: CIA World Factbook, Field Listing–Languages (World)]. Approximately 30% of the world population speaks English. Therefore, English is considered a necessary tool for international communications. Considering these national and international issues, English has been given the status of second language in India and it is taught as a compulsory subject in schools in the country.

In this backdrop of English education in India the students learn English from the primary stage, and the target as recommended by different Commissions and set forth by the Government is the attainment of a working knowledge of the language. Working knowledge encompasses the ability in all the four language skills of listening, speaking, reading and writing, the basics of communicative competence. The reality, however, is that the students in Bengali medium schools in West Bengal are quite weak in the skill of speaking. This is, perhaps, because this skill area is somewhat neglected in the regular classroom activities and in evaluation too. To assess where the students stand as regards their oral communicative competence, development of an English oral test for the students who learn English as second language, is necessary. For the purpose, a review of the different models of communicative competence is, no doubt, essential.

### ***Theoretical Considerations***

Different models of oral communicative competence have been consulted for coming to a decision about the criteria of assessment that provides the foundation of the test. Many applied linguists during 1970s and 1980s opposed Chomsky's concept of linguistic competence, a purely grammatical competence, as the theoretical basis of teaching and testing language competence. They found the answer in Dell Hymes (1972) who first introduced the term 'communicative competence' that includes sociolinguistic and contextual competence along with grammatical competence. His model is primarily concerned with language use in social context, but it also addresses issues of language acquisition. Thus his model includes grammatical, sociolinguistic and contextual competences.

According to Hymes, communicative competence is the ability to produce utterances which may not be so much grammatical but, more importantly, are based on the rules of language use appropriate to the context in which they are made. In Hymes' (1972) well-known SPEAKING heuristic the letters stand for different aspects of communicative competence. 'S' stands for setting and scene, physical circumstances; 'P' refers to participants including speaker; 'E' means end, or goals; 'A' stands for act sequence (message form and content); 'K' deals with key tone and manner; 'I' stands for instrumentalities, verbal, non-verbal

and physical channel; 'N' refers to norms of interaction, specific proprieties attached to speaking; and finally 'G', refers to genre or textual categories.

Hymes's concept of communicative competence inspired subsequent model developments, such as those of Canale and Swain (1980) and Canale (1983), and Bachman (1990). These three most frequently used models are discussed here.

- a) Canale and Swain (1980), in their original model speak of three components of communicative competence:
  - i) Grammatical competence—It refers to the use of grammar rules in the organization of words. It is synonymous with Chomsky's 'linguistic competence'.
  - ii) Socio-linguistic competence—It refers to the application of the knowledge of the society and its culture in the choice of patterns of language and vocabulary to make language acceptable to specific social situations, and to convey specific communicative functions such as describing, narrating, commanding, complaining, and etc.
  - iii) Strategic competence—It refers to appropriate use of communication strategies to maintain the fluency and enhance efficiency of communication. Thus strategic competence helps to compensate for breakdowns in communication due to performance variables or due to insufficient competence. It may be achieved through restructuring, circumlocution, non-linguistic means of mime, gestures, using fillers (e.g., what I mean to say/ actually) etc.
- b) Canale, in 1983, added a fourth component to the above model—
  - iv) Discourse competence —It refers to 'coherence' that refers to consistency in meaning, and cohesion' in expression. This cohesion of thought is attained by means of cohesive devices, such as pronouns and linkers, together with a unity of thought and continuity in a text.
- c) Bachman, in 1990, remodeled the components and gave us the broad headings of—
  - i) Organisational competence: includes grammatical, and textual competence (conversational organization and cohesion)
  - ii) Pragmatic competence: includes socio-linguistic (use of language, vocabulary and structures, appropriate to the context in which it is used) and illocutionary competence (functional use of language/how to perform speech acts to achieve specific effects).
  - iii) Strategic competence : includes the use of communication strategies (as in Canale and Swain's model). An overview of the models showing their similarities and differences is given here.

**Table 1 : Similarities and differences of the several models of communicative competence**

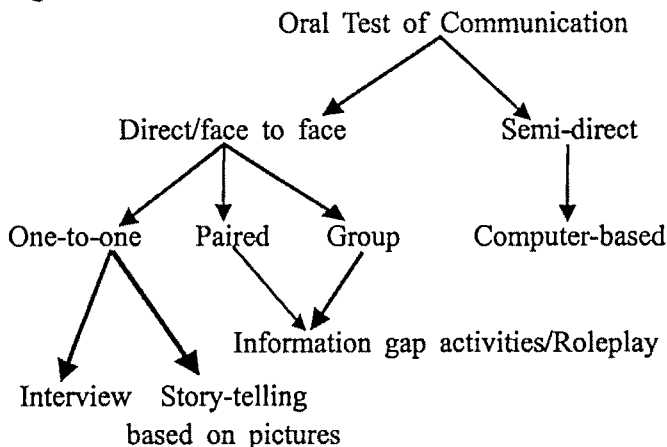
Canale & Swain (1980)	Canale (1983)	Batchman and Palmer (1996)
Grammatical Competence	Grammatical Competence	Organisational Competence * Grammatical * Textual
Socio-linguistic Competence	Socio-linguistic Competence	Pragmatic Competence *Socio-linguistic *Illocutionary or Functional
	Discourse Competence	
Strategic Competence	Strategic Competence	Strategic Competence

The above table shows that the 1983 model of Canale is a comprehensive one that includes all the different aspects of communicative competence presented in the other two.

The above discussion points to the different components of communicative competence which should be considered while testing the students' oral communicative competence. The fact is that all these components cannot be assessed through a single test at a particular point of time.

### ***Assessment of Oral Communicative Competence***

Tests of oral communication are intended to measure how the test-takers are able to use the target language in real life situations. There are different formats of speaking test.



**Figure 1 : Types of oral test of Communication**

Among all these, the Direct format of face-to-face interview presents the greatest scope for testing oral communicative competence in real-life situation. The present test, therefore, includes an oral interview. However, interviews have some limitations, too. They do not allow the examinees to take long turns. As a result discourse competence of the examinees cannot be assessed properly through interviews. To overcome this limitation, another face-to-face technique, story-telling based on pictures, is used for measuring discourse competence of the examinees.

In the field of language research, testing of oral competence is the weakest area where only a few studies exist. According to Lado (1961) as quoted in Fulcher (2003, p. 18), the ability to speak a foreign language is without a doubt the most highly prized language skill, and rightly so... yet testing the ability to speak a foreign language is perhaps the least developed and the least practiced in the language testing field. It is true not only for the EFL context but for the ESL context too. Since 1961 many years have passed and the need for developing communicative competence in the students is now the focus in teaching of English as second language. As the concept of communicative competence is, still now, quite young, research in the area of oral communicative competence is yet in its infancy.

However, different countries have developed a number of national and international tests for measuring English language oral proficiency, which are being continuously revised to keep pace with the demands of the day. A few are mentioned here.

- i) Test of Spoken English (TSE): The TSE (Test of Spoken English) measures the ability in oral communication in English. The Test requires examinees to perform a particular speech act, such as narrating, recommending, persuading or expressing and supporting an opinion in answering the test items. During the test, various situations are described by a speaker on an audiotape and questions are also posed. The score is reported on a scale of 20-60. There are no passes or fails. Each institution determines for itself what scores are acceptable.
- ii) AICTFL (American Council on the Teaching of Foreign Languages) Oral Proficiency Interview (OPI) and OPIc: OPI is used for assessing one's functional speaking ability. It is a carefully structured face-to-face or telephonic conversation between a trained and certified interviewer and an examinee. The ability level of the examinee is measured by comparing his/her performance with the criteria described in the *ACTFL Proficiency Guidelines-Speaking* (Revised 2012).

The OPIc is the computer-based version of the OPI, administered via a computer and secure internet connection.

- iii) Internet based TOEFL (iBT): It was developed by ETS (Educational Testing Service) to test one's ability in all the four skills (listening, reading, speaking and writing). However, the section of the test related to speaking skill is not available separately.
- iv) International English Language Testing System (IELTS): It is developed and administered by the British Council. Like the TOEFL, the IELTS covers all the four basic language skills (listening, reading, speaking and writing). Now it is being accepted by a growing number of American colleges and universities as a substitute for TOEFL.
- v) SPEAK (Speaking Proficiency English Assessment Kit): This oral test is developed by Educational Testing Services (ETS). The purpose of the test is to assess the speaking ability of the non-native speakers of English. It is a professional certificate required for graduate teaching assistants in American colleges and universities. It is also used in medical professions as communication with patients is needed here.
- vi) TOCC (Test of Oral Communicative Competence): It is developed and used by National University of Singapore to test its undergraduate and post-graduate students' oral communication skills with a view to make them prepared for Singapore's multinational workplace.

All these tests intend to evaluate the level of oral proficiency of non-native English speakers, and they are meant for screening the applicants for higher education or teaching and research assistants or workplace. Recent researches, therefore, show an inclination towards the development of individual tests of oral proficiency in ESL at different levels, including rating scales suited to the specified group of test-takers. Malone and Montee (2010) explored new approaches to oral proficiency assessment, including computer-mediated oral proficiency testing. They also examined the expected proficiency outcomes for foreign language students at different levels. They recommend ways to increase the formal use of oral proficiency assessment and establish and publicize realistic expectations of outcomes for programs, instructors and students.

Danny Huang and Alan Hung (2010) investigated whether the incorporation of e-portfolios in EFL conversation classes would give rise to better oral performance. The results revealed that the e-portfolio group outperformed its control counterpart in a statistically significant manner in terms of total words

and lexical richness but not in regard to syntactic complexity, suggesting that e-portfolios functioned to benefit learners' oral performance lexically but not syntactically.

Fulcher, Davidson and Kemp (2011) argue that performance data-driven approaches have the potential to provide richer descriptions that offer sounder inferences from score meaning to performance in specified domains. With reference to original data and the literature on travel service encounters, they developed a new scoring instrument. It has been termed as 'Performance Decision Tree' (PDT). This instrument prioritizes 'performance effect' by explicitly valuing and incorporating performance data from a specific communicative context.

Van and Alistair (2012) incorporated the assessment of psycholinguistic constructs into spoken language proficiency testing. They proposed that efficiency of language processing, although not found in most models of communicative language competence, might be viewed as a language competence in its own right. The test framed by them consisted of simple, but psycholinguistically valid tasks of sentence repetition and sentence building, and reliably separated test takers according to proficiency in a way that accounts for the trade-off between fluency, accuracy and complexity.

According to Kim and Craig (2012) videoconferencing offers new opportunities for language testers to assess speaking ability. They found that the videoconference interview was comparable to the face-to-face interview with respect to reliability, construct validity, authenticity, interactiveness, impact, and practicality.

Sinwongsuwat (2012) reassessed the mainstream tasks used for evaluating Thai ELF learners' speaking skills: face-to-face interview and role-play. The capacity of these two tasks to assess the learners' conversation skills in particular was examined. It is argued that if implemented with an appropriate rubric, the task of nonscripted role-play should enable us to better assess the students' ability to converse in naturally-occurring communicative situations and with practice make it possible to develop students with better proficiency in English conversation.

Liu Mingming (2013) contributed to the modification of the rating scale for the story retelling task of TEM4 Oral Test. His study suggested that fluency should be added as a category into the present story retelling rubric which only contains grammar and vocabulary, retelling content and pronunciation. The study has made a contribution to a more detailed and operationalized rubrics.

Yuna Seong<sup>1</sup> (2014) reviews the applied linguistics literature on the major influential approaches to understanding oral strategic competence, an integral component of communicative language ability. An in-depth review of how the L2 assessment literature has conceptualized *strategic competence* in relation to different theoretical models has also been made by him. Lastly, a discussion of empirical studies examining strategic competence in the context of speaking test performance, is presented by him.

The above discussion points to the fact that there are international and national level tests of oral communicative competence developed by different countries like the USA, The UK, Canada and even Singapore, to be used for selecting candidates for higher education institutions or workplace that require communication in English. Thus for assessing the oral proficiency of the younger group, secondary level school students, no test of oral communicative competence is readily available. Besides, world Englishes require the development of oral tests to assess the regional level proficiency in spoken English, especially in multilingual countries like India, for use within the country. The absence of any such standardized oral test to assess the oral communicative competence of the secondary level students necessitates the development of an oral competence test.

### ***Developing an English Oral Communicative Competence Test***

This paper describes the process of developing an English oral communicative competence test. With due respect to and consideration of the Indian situation, the test has been developed following the guidelines provided by Luoma Sari in "Assessing Speaking" (2004, Editors, J.C. Alderson and L.F. Bachman, Cambridge University Press, ISBN 0 521 80487 6). According to Luoma Sari, the very first step in developing a test is to determine the *test specifications*. Test specifications represent the underlying principles of the test and focus on the constructs to be assessed, how assessment will be done/ description of the tools or tasks to be used and what the criteria of assessment will be.

The specifications model provided by Luoma Sari is presented below in a modular form. It has three/four modules—Construct specification, Task specification, Assessment specification and History profile. All the contents mentioned above have been included in one or the other module. The last one, History profile, is the unique part of the model of Luoma Sari.

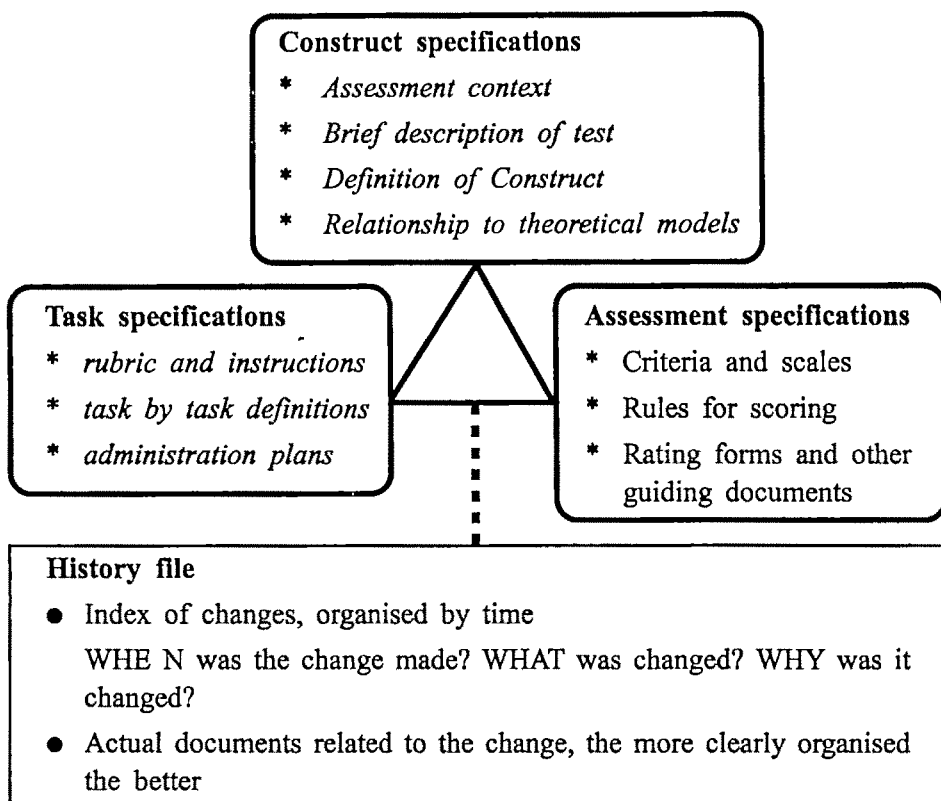


Figure 2 : Modular Specifications.

(Source: "Assessing Speaking", Luoma Sari, 2004, Editors, J.C. Aldersonand, L.F. Bachman, Cambridge University Press)

Based on the above model proposed by Luoma Sari, an English oral communicative competence test is developed. Specifications of the test at hand are written here.

### ***Construct Specifications for the Test at hand:***

#### **Context of the Test**

The test is meant for students in the last phase of their secondary education, before their final Board Examination (Class X). They belong to the age group of 15-16 years. They have been learning English as a second language from Class V, i.e., for six years. English is a dominating official language in the country, but most of the students rarely use English for real-life purposes outside the English class. They have the scope of exposure to the language through radio and T.V. programmes like pop-music and films, though very few actually watch English programmes broadcast on radio or Television. The purpose of the test is to measure the level of communicative competence of the students who

are at the terminal point of secondary education (Class X, last term) in regional medium schools. The components of communicative competence selected for measuring are 'Linguistic competence' and 'Discourse competence'. The test scores will be used by the test developer to draw a sketch of the students' level of development in oral communicative competence, and identify the areas of weakness of the students. This in turn will help policy makers and curriculum developers to plan accordingly to reduce those weaknesses and to improve oral communicative competence of the students.

### ***Construct Definition and Relationship to Theoretical Model***

The test based on the model of Canale and Swain (1980) modified by Canale in 1983, measures oral Communicative competence in terms of 'linguistic competence' and 'discourse competence'. Linguistic competence is reflected in

- Pronunciation: Refers to intelligibility—whether it is intelligible enough to allow conversation roll on. Native like pronunciation (of the English men or the Americans) is not the target for the Indian speakers of English. Pronunciation intelligible to the local users and accepted by them is taken as the standard one.
- Vocabulary: Refers to the choice of words—relevance of words used, range or diversity as reflected in the ability to elaborate with relevant vocabulary; and also understanding of others' speech.
- Grammar: Exhibited in use of varied structures, errors in language production and awareness of errors.
- Fluency: Exhibited in natural flow of speech without much hesitation or unnecessary gaps, that allows maintaining the conversation. It covers fluency both in comprehension and production of English.

Discourse competence is reflected in

- Organisation: Exhibited in coherent expression of thoughts, and use of linkers and other cohesive devices.

Strategic and sociolinguistic competences are not measured explicitly. These two components are kept out because in the Indian context the secondary level students of the regional medium schools are not expected to develop them.

### ***Brief Description of the Test***

The test attempts to measure oral communicative competence of the secondary level students and the test items are framed to assess their ability in informal free conversation. The test items, therefore, are related to diverse aspects of their life and experience—education, importance of English, family, locality, leisure, social awareness, and future plans. The items are so framed that the

students require using simple present, past and future tense. Thus they will help measuring grammatical competence of the students.

The test has two parts and is expected to be completed in 16/17 minutes. However, the length of the test may vary depending on the ability of the interviewees. The first part is a face to face structured personal oral interview (SPOI) which comprises 34 test items. These 34 test items are divided into four groups—

- ‘Warm-up’ with a few easy questions preparing the students for the interview, such as on knowing the interviewee (e.g., What is your name?). This ends in not more than two (2) minutes.
- ‘Level Check’ comprises only a few basic level questions of general nature to make them feel free and get themselves involved in conversation (e.g. How do you come to school?). It may take three (3) minutes approximately.
- ‘Probe’ constitutes the main body of the interview and comprises questions on different areas of life and experiences—place of living (e.g., Where do you live?), family (e.g., Who are the members in your family?), leisure (e.g., What do you like to do in your spare time?), social views (e.g., Should cell-phones be used everywhere ?), future life (e.g., What sort of job would you like to do in future ?), etc. It being the main body of the interview takes the longest time, expectedly Six(6) /seven (7) minutes.
- ‘Wind-down’ with questions aiming to end the interview leaving the students feeling at easy and relaxed (e.g., Did you feel okay with this interview?). It is expected to end in a minute or two (1/2 minutes).

The second part of the test consists of a Picture-cued Story. It presents six pictures in a sequence (taken from *Assessing Speaking* by Luoma Sari) and the students are to tell the story as perceived from the pictures. The students are given a minute to watch the pictures silently before they start telling the story. It requires the students tell the incidents in proper sequence to create a meaningful story. The students may take approximately three (3) minutes to tell the story.

### ***Task Specifications***

Simply speaking, tasks are activities that people do. Nunan (1993: 59) defines a **communicative task** as:

“... a piece of classroom work which involves learners in comprehending, manipulating, producing or interacting in the target language while their attention is principally focused on meaning rather than form.... Minimally, a task will consist of some input data and one or more related activities and procedures. Input refers to the data that learners are to work on: it may be linguistic (e.g. a radio broadcast), non-linguistic (e.g. a set of photographs),

or 'hybrid' (e.g. a road map). In addition, tasks will have, either explicitly or implicitly (and in most cases these are implicit), goals, roles of teachers and learners and a setting." (Source: "Assessing Speaking", Luoma Sari, 2004, Editors, J.C. Alderson and, L.F. Bachman, Cambridge University Press, p. 30-31)

In the context of oral communication or speaking, tasks are activities that require speakers use language for communication in real-life situations.

### ***Test Rubric***

According to Bachman and Palmer (1996: 50), "The test rubric includes those characteristics of the test that provide the structure for particular test tasks and that indicate how test takers are to proceed in accomplishing the tasks".

The features, based on the list given by Bachman and Palmer, of the ***rubric and the instructions to examinees for the test*** at hand are as follow.

- a) ***The structure of the test*** : The test is to be given to one student at a time. The test consists of two parts. The first part requires the examinees participate in a conversation with the interlocutor, that involves their comprehension of the questions asked by the interlocutor and production of short relevant answers. Here they are exposed to a feel of natural conversation in a face to face ***Semi-structured Personal Oral Interview (SPOI)***.

The second part of the test includes ***Picture-cued Storytelling (PCU)***. It is an open-ended narrative task that involves the examinees in observing six pictures in a given sequence and then telling the story as perceived by them from the pictures. The examinees have to tell the story or incident at a stretch. It is to be at an uninterrupted long turn.

- b) ***Instructions to the examinees*** : You will be given an oral test. The test is an easy one. There is nothing to worry about. You are to come one by one and answer what you are asked. First there will be a simple friendly conversation and all the points in conversation will be related to your day to day life experience. Try to answer in complete sentences in English. During the second part of the test you will be shown six pictures which together present a story or an event. You will be given one minute to watch the pictures before you start telling the story/event. Study the pictures minutely. Taking cues from the pictures imagine and tell the story or the incident in as much details as possible. Your comprehensibility, accuracy and fluency in language use will be assessed. The test situation will be video recorded only to help in measuring your ability in oral communication. Be easy with it. It will not be used for any other purpose.

(The instruction may be given orally using mother tongue of the examinees, if required).

- c) *Duration of the test* : The **SPOI** will take 12/13 minutes approximately, and the time allotted to **Picture-cued Storytelling** is 3 to 4 minutes. The length of the test may vary depending on the ability of the examinees.
- d) *Process of evaluation* : The oral test for each examinee tape recorded for later evaluation of his/her performance. For evaluating the examinees' performance in SPOI attention will be given on assessing pronunciation, vocabulary, grammar and fluency. For measuring the students' level of ability in all the said four aspects of oral communicative competence the descriptors of the four aspects are measured on a five-point scale. The responses of the students will be scored one by one for all the descriptors of all the aspects—pronunciation, vocabulary, grammar and fluency. The individual scores for each item will be added to get the task score.

For assessing their performance in the second task (*PCU*), in addition to the aforesaid four aspects of language use, the aspect of organisation is also included. Here also a five-point scale will be used for measuring the descriptors of all the five aspects of oral communicative competence including organisation. For this task a holistic/global approach will be taken for measuring the different aspects of communicative competence, considering the story produced as a single item.

Thus the test combines qualitative and quantitative assessment of the students' oral communicative competence.

### ***Task Definitions***

**SPOI** or the Semi-structured Personal Oral Interview includes 34 items aimed at measuring oral communicative competence of the examinees in relation to different contexts (education, importance of English, family, locality, leisure, social awareness, and future plans) in terms of linguistic competence. So it focuses on measuring the examinees' ability in pronunciation, in the use of appropriate vocabulary, grammar, and fluency. However it does not measure the aspect of 'organisation', an important facet of discourse competence, as all the questions it includes invite short answers. There is, therefore, not much scope of exhibiting organization of thoughts and ideas on the part of the examinees.

The second task, *PCU* is an open-ended task. It presents six pictures in a specific sequence that tells a story/an incident. It provides scope for the students to use language freely in their own different ways with concentration on different aspects in the pictures depending on their imagination and oral ability. It measures linguistic competence in terms of pronunciation, vocabulary and

grammar, and also discourse competence as displayed in fluency as well as organization.

### ***Plan of Administration***

The test is to be administered on the secondary level students (Class X) during the last quarter of the final year of their secondary education. To the test-takers the interlocutor is an unknown person. To avoid distraction caused by outside noise the test should be taken in a room away from the din and bustle of the school. If any student keeps mum, encouraging comments are to be made so that he/she utters a few words at least. To avoid unnecessary lengthening of the test and ensure similar treatment to all the examinees the interlocutor is to restrict himself/herself to one or two encouraging comments only.

In case of the picture-cued story if the students are unable to tell the story/event, one question for each picture may be used for eliciting response. The interlocutor must restrict himself/herself to one question per picture, and never more than that.

For administering the test it is important to secure :

- A quiet place with little distraction, and equipped with a table and two chairs.
- The Test-booklet.
- A video camera.

### ***Assessment Specification***

A detailed discussion of how the students' performance in the test is assessed is given below.

Criteria, scales and scoring

In line with the purpose of the test and the specified construct, two sets of criteria have been defined for the present test. They constitute linguistic and discourse criteria that focus on intelligibility of pronunciation, relevance and range of vocabulary used and comprehension, accuracy and range in the use of structures, fluency in language production and comprehension, and organization of thoughts and expression. On the basis of observations of language performance of the test-takers, detailed descriptors have been generated for measuring different criteria.

Scoring of **SPOI** is done against the answers given to the questions asked by the interlocutor. For each question each of the components of oral competency (pronunciation, vocabulary, grammar, fluency) is measured on a five point scale. Scores for each of the descriptor of the different components of oral competency range from 1 (denoting very poor/'never' before a descriptor) to 5 (denoting very good/'always' before a descriptor).

The descriptors beginning with ‘\*\*\*’ get reverse marking–1 for ‘always’ and 5 for ‘never’. For example, the marking scheme for the descriptors of vocabulary is as follows.

**Descriptor 1 : Uses relevant and elaborative vocabulary to convey meaning.**

Type of answer	Marks awarded
Speechless or answer in mother tongue	1
Relevant 1/2 word/s answer	2
Answer in more than two relevant words/simple and complete sentence, if wrong	3
Answer in relevant and correct sentence	4
Answer in relevant correct sentence using adjectives/idioms	5

**Descriptor 2 : \*\*Needs help to understand the question.**

Type of answer	Marks awarded
Requires full translation in mother tongue	1
Requires mother tongue equivalent of one word or two	2
Requires reframing of the question	3
Repetition of the question for once is required	4
No help	5

**Descriptor 3 : \*\*Answers in basic words**

Type of answer	Marks awarded
Answer in mother tongue or no answer	1
Answer in yes/no or words from the question only	2
Answer in one complete but wrong sentence in own words	3
Answer in one complete and correct sentence in own words	4
Answer in more than one descriptive sentence	5

**Descriptor 4 : \*\*Searches for words**

Type of answer	Marks awarded
Answer in mother tongue/no answer	1
Yes/no answer or answer with unfilled gaps	2
Pauses while answering, but the gaps are filled	3
Falters, but answers in full sentence	4
Answer in full sentence/s with no pause	5

For the **Picture-cued Storytelling** also a five-point scale is used for measuring the descriptors of all the five aspects of oral communicative competence including organization. For this task a holistic/global approach is taken for measuring the different aspects of communicative competence, considering the story produced as a single item. For example the rating scale for vocabulary is given below.

**Table 2 : Component Descriptors**

Excellent (5)	Good (4)	Average (3)	Fair (2)	Poor (1)
Uses varied and descriptive language, with native-like phrasing/idiomatic expressions.	Uses words to elaborate on thoughts and ideas and the minute details of the pictures	Vocabulary is limited but allows meaningful presentation of the story/event.	Vocabulary span is inadequate to express anything but the most elementary ideas	Remains speechless.
Uses extensive vocabulary that allows effective presentation of the story/event	Vocabulary is broad enough, but may occasionally search for words.	Uses isolated words or sentence fragments. Uses one word or two in 1st language.	Or Uses only basic vocabulary with heavy dependence on 1st language.	Or Uses gestures or only first language

### ***Reliability of the Test***

The reliability of a test indicates its consistency of measures. The high reliability of any test is a desirable and necessary quality. There are various methods of assessing reliability namely inter rater reliability, test retest reliability, parallel form reliability and internal consistency. All these methods have their advantages and disadvantages. After considering the pros and cons of each method test retest method was adopted as parallel form and internal consistency methods were not suitable in this case. Inter rater reliability assessment was not adopted to minimize the undue influence of the interlocutor. The reliability of the subtests and whole test is given in the following table.

**Table 3 : Correlation of Test-Retest Scores**

	pronunciation	vocabulary	grammar	fluency	organization	Whole test
Semi-structured Personal Oral Interview	0.9	0.9	0.9	0.81	0.83	0.93
Picture-cued Storytelling	0.8	0.74	0.85	0.88	0.94	0.88

The above table shows a high correlation of test-retest scores for both **SPOI** and **PCS**. This proves the test to have a high degree of reliability.

### ***Validity of the Test***

Validity of the test indicates how far the test measures what it purports to measure. This test is a criterion referenced test where the communication competency of the test taker is measured in terms of descriptors. The descriptors or rubrics are meticulously planned on the basis of input given by the subject experts who are also experts and experienced teacher educators of English method subject. Hence the test should be considered as valid.

### ***Discussion***

The test items are distributed to different areas relevant to the life and interest of the students. Thus they cover personal information about the test-takers, their likings, their family, their concern about the society, and also their future plans. Thus the test requires the test-takers to speak on subjects they are very much familiar with and so they face the test quite comfortably.

The descriptors in the assessment scale are framed on the basis of the objectives of learning English as second language, as specified by the West Bengal Board of Secondary Education, and the actual performance of the test-takers in the test. This is done to make the test relevant to the context of the test.

Although much research is yet necessary in the field of Oral Test development, the high Test-Retest reliability coefficient of the present test, no doubt, is an approval for the use of the test and also the scale developed on the basis of performance of the test-takers, for assessing oral proficiency of secondary level (Class X) students. In addition, a combination of quantitative (Oral Interview) and qualitative approach (Picture-cued Storytelling) makes the test more reliable and valid.

The fact that assessment of communicative skill focuses on communication in natural situation of real life, is also taken care of. The situation of the test is not really natural, in the truest sense of the term. For the test the test-takers are uprooted from their classroom and placed in a separate room, one by one, to face the interlocutor, a person unknown to them. However, to make the situation light and seemingly natural, the interlocutor gives some time, before the actual test, to establish a rapport with the test-taker.

The test focuses only on two components of communicative competence—the students' linguistic competence such as use of vocabulary, grammatical structures, pronunciation and fluency, and discourse competence as reflected in the use of cohesive devices and organization of speech.

The present oral test has proved itself to be highly reliable and also valid; it has its limitations, too. The sample size is not large enough to claim it to be representative of the secondary level students population. The sample included 21 students. This is caused by irregularity of attendance of the Class X students spending much time at home in preparing for the Board Examination. However, both boys and girls from urban and semi-urban areas are included in the sample.

Further, it does not focus on all the four components of oral communicative competence. The aspects of linguistic and discourse competence are taken care of ignoring socio-linguistic and strategic competence.

### **Conclusion**

This systematically constructed oral test in its two parts (SPOI and PCS) may be used for assessing the oral communicative competence of the students nearing the end of secondary education. The framing principles of the test and the rubrics, and also the results of the test affirm it as a reliable one in the context of Bengali medium schools of West Bengal. Its *implication* for teachers and their focus of teaching is also worth mentioning. The descriptors of the various components of oral communicative competence, specified in the rubric of the test, will help the teachers to identify the areas to be addressed for developing oral communicative competence of the students. The areas of communicative competence neglected in this test call for further research for revision of the test in its present form, in order to make it applicable in broader contexts.

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## Ecological Citizenship Behaviour (ECB) in the Context of Domestic Waste Management : A Case Study on Sustainability in Kolkata Municipal Corporation

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### Abstract

*The present study was framed to relate ecological citizenship behaviour in the context of domestic waste management. The design of the study is case study based on community survey. It is a mixed method design where the questionnaires are used to collect data which was analyze quantitatively. Qualitative method based on semi structured interview schedule is used for in depth analysis. The sample comprises 120 householders, both male and female, residing within the jurisdiction Kolkata Municipal Corporation. Ecological citizenship behaviours like reducing consumption, reusing materials or most importantly recycling are not commonly practiced. The scores obtained from the administration of ecological citizenship behaviour scale showed that the scores are normally distributed around the mean. From the qualitative data, it was found that the respondents are well aware about issues related to sustainability and environmental problems in the context domestic waste accumulation and its disposal. However, they reported that they often fail to carry out recycling process due to various reasons. The study also revealed that in the sampled area the types of garbage do not contain e-waste or other polluting chemical substances. This research addresses the issues like civic body's policies in reference to civic amenities and clean environment.*

**Key Words :** Sustainability, Ecological Citizenship Behaviour and Domestic Waste Management

### Background

Management of huge waste generated by consumerist society is a difficult challenge that has to be dealt efficiently to usher in a sustainable society. Along with industrial and commercial wastes, domestic waste is a cause for concern as our society is fast moving towards rampant consumerism with the increasing

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purchasing power of the people cutting across socio economic strata. One way of managing household waste is to develop social entrepreneurs within the civil society. When the common people are endowed with ecological citizenship skill the management of domestic waste becomes effective. UNEP in this respect pointed out that proper waste management presents an opportunity not only to avoid the detrimental impacts associated with waste, but also to recover resources, realize environmental, economic and social benefits and take a step on the road to a sustainable future (UNEP, 2013). In this context, the responsibility of citizens is imperative and there is an urgent need to develop ecological citizenship qualities. It is now realized more and more that the behaviours of the householders are key to sustainability as they are not only consumers but also environmentally sensitive and proactive members of the society. Sustainability is the ability to meet society's present need without compromising the ability of future generations to meet their own's need. The British Government's Sustainable Development Strategy (DEFRA, 2005) upholds the positive role of individual citizens in ameliorating the environmental problems related to over consumption and 'throw away' culture. Based on the objectives of environmentalism proposed by Tbilisi Conference (1978), environmentally responsible citizens are characterized by awareness, sensitivity, understanding and feeling towards environment. To tackle this huge amount of domestic waste and to incorporate social change towards sustainability our knowledge of 3 R's (Reuse, Reduce, and Recycle) is very crucial. Sustainability is now viewed as a national topic of public concern (Bezbatchenko, 2011). Sustainable living requires requisite skills to solve environment related problems by active participation in the process. All these call for voluntary change of habitual behaviour which has been termed 'unfreezing habitual behaviour' (Jackson, 2005) and development of new social norm.

Ecological citizenship is a new concept, which seeks to incorporate ecological rights, and responsibilities with the objective of promoting public actions for the mitigation of environment related impending catastrophes. The concept of ecological citizenship is related to the concept of sustainable development. Living sustainably implies living well and letting others live well. Wellness is more normative than technical as it depends on pro social altruistic values. Dobson (2003), Dobson and Bell (2006) mentioned the importance of collective values and solidaristic objectives in this respect. Dobson and Valencia Saiz (2005) underscored the opposing pull of egoistic and altruistic values that characterizes the citizenship behaviour. Beckman (2001) postulated that an ecologically motivated citizen has to be virtuous forging an ideal relation between individual and common good. Sociology has explained the concept of citizenship because of civil rights, duties and responsibilities of the common man

but the ecological risks and environmental issues were not adequately addressed. Barry (1999) called for 'greening' of the social theory where sustainable approach is to be coordinated with development. The citizens must realize their obligation towards other fellow members of the society, that is intra generational obligation and be aware of intergenerational obligations which means leaving a healthy and functioning eco system for future generations.

Domestic waste can be defined as matter for which society no longer has any immediate use, something that is rejected because it is considered to be worthless or not needed. It is difficult to define rather it is readily recognized. It includes fine dust, cinder, metal, glass paper, cardboard, textile putrescible vegetable materials plastic etc (Simmens, 1981). In recent times another highly dangerous material has been added to the list and that is e-waste. With the rapid explosion of population and consumerism the amount of domestic waste has increased enormously which poses a grave threat to ecology and human health.

The waste disposal is not only the responsibility of civic bodies but also of people as it requires behaviour change. This can only be accomplished by fostering shared responsibility and group participation. To promote suitable actions regarding the issue (domestic waste disposal) a number mechanisms are required namely regulatory mechanisms by the government, incentives/disincentives related to waste disposal and voluntary activities undertaken by the stakeholders etc. The strategies for waste management should take in to account the following antecedent issues which were proposed by Waste Strategy for UK—

- Perception of environmental issues and green behaviour
- Attitude to household rubbish
- Attitude options for waste management
- Pattern of behaviour in dealing with household rubbish and recycling
- Motivation to recycle
- Local recycling service provision
- Awareness and information and responsibility for waste
- Household management
- Charging for waste etc.

The present study has been based on the perception of above mentioned issues and its relation with the citizenship behaviour. The present study has been framed to explore ecological citizenship behaviour in the context of domestic waste management.

### ***Objectives of the Study***

The objectives of the present study are—

- To assess the ecological citizenship behavior *in the context of domestic waste management*.
- To study the effect of educational qualification, monthly income and gender on the ecological citizenship behaviour.
- To assess the awareness and knowledge of the respondents regarding amount, nature, types and the method of disposal of the domestic waste.
- To understand their views regarding domestic waste management.

For achieving the first two objectives, quantitative research method has been undertaken while the other two objectives are dealt by means of qualitative analysis.

### ***Hypotheses of the Study***

The investigator made the following null hypotheses—

- H<sub>0</sub>1— There is no significant differences in ecological citizenship behaviour scores among the respondents in respect to -
- a- Educational qualification
  - b- Gender
  - c- Monthly income
- H<sub>0</sub>2— There is no significant interaction effect ecological citizenship behaviour scores of respondents on-
- a- Educational qualification and gender
  - b- Educational qualification and monthly income.
  - c- Monthly income and gender.
  - d- Educational qualification, gender and monthly income.

### ***Research Methodology***

#### **Design**

This study is a cross-sectional empirical study based on mixed methods research approach. This is a  $2 \times 2 \times 2$  *factorial research design*.

#### **Population and Sample**

Kolkata, the capital of the state of West Bengal, is the third most populous metropolitan city in India. Because of its burgeoning population and unplanned urbanization Kolkata is also one the most polluted cities in the world with poverty, high rate of air pollution, traffic congestion and other socio economic problems. Obviously the problems related to garbage accumulation, disposal and management are intractable issues. Although the government has to take responsibility yet the role of citizenry is of immense importance. In a study

conducted by Maity et al. (2011), it was found that the solid waste management in Salt Lake City within the jurisdiction of Kolkata appears to be inadequate and needs up gradation. The present sample comprises 120 householders, both male and female, residing within the jurisdiction Kolkata Municipal Corporation.

#### Instruments

The instruments of the present study are—

- Ecological citizenship behaviour scale framed by the researchers to assess the ecological citizenship behaviour taken towards domestic waste management. The items for the scale were development on the basis of the experts' opinion to ensure construct validity. The reliability was determined by Cronbach Alpha which was found to be moderate (0.67). Item total correlations were also calculated. No item was found to have zero or negative correlation. Examples of items from the scale are—"I use vegetable skins, tea leaves and other food materials to make organic fertilizers" and "It is not possible to dispose everyday wastes in to vat."
- Semi-structured Interview Schedule to assess the awareness and knowledge of the respondents regarding amount, nature, types, method of disposal of the domestic waste. The interview schedule was constructed on the basis of the study objectives with the help of the experts proficient in environment related issues. Questions for qualitative analysis were framed. Examples of interview questions are—
  - a) What types of waste are generated from your houses?
  - b) Whether you reuse or recycle?
  - c) What is your opinion regarding recycling and composting?

#### Results and Discussion

**Table 1 : Descriptive Statistics Concerning Distribution of Ecological Citizenship Behaviour Scores**

N	Mean	Median	Mode	S.D.	Variance	Skewness	Kurtosis	Range	Sum
120	51.91	51.5	51	3.764	14.168	0.279	-0.294	19	6229

The descriptive statistics in Table-1 for ecological citizenship behaviour showed that the Mean, Median and Mode values are almost same. The S.D. (3.764) showed that the variability of the scores is also small. The Skewness and Kurtosis values are also very low (0.28 and -0.29) indicating that distribution is near normal though the curve is little flatter and positively skewed.

**Table 2 : Mean and S.D. of the Groups Considered for Ecological Citizenship Behaviour Scores**

Category	Education Qualification		Gender		Monthly Income	
	School Level	College Level	Male	Female	Below 10000	Above 10000
<b>N</b>	35	85	77	43	16	104
<b>Mean</b>	52.31	51.74	51.83	52.05	52.88	51.76
<b>S.D.</b>	4.143	3.609	3.704	3.909	2.802	3.88

Table No. 2, shows that ecological citizenship behaviour scores of the respondents who studied up to school level ( $M=52.31$  and  $S.D.=4.143$ ) is higher than respondents who have college level degrees. ( $M=51.74$  and  $S.D.=3.609$ ), the mean score of the female respondents ( $M=52.05$  and  $S.D.=3.909$ ) is higher than that of male ( $M=51.83$  and  $S.D.=3.704$ ) and also the mean score of respondents below Rs. 10000 monthly income ( $M=52.88$  and  $S.D.=2.802$ ) is higher than that of the respondents having income above Rs.10000 per month ( $M=51.76$  and  $S.D.=3.88$ ).

**Table 3 : Summary of the Factorial Analysis of Variance (ANOVA) for the Scores of Ecological Citizenship Behaviour**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
<b>Main Influence</b>					
Educational qualification. (A)	3.595	1	3.595	0.260	0.611
Gender (B)	0.184	1	0.184	0.013	0.908
Monthly Income (C)	8.546	1	8.546	0.618	0.433
<b>First order Interaction Influence</b>					
Educational qualification and Gender (A×B)	16.583	1	16.583	1.200	0.276
Educational qual. and Monthly Income (A×C)	4.684	1	4.684	0.339	0.562
Gender and Monthly Income (B×C)	17.601	1	17.601	1.273	0.262
<b>Second order Interaction Influence</b>					
Edu. quali, gender and Income (A×B×C)	11.808	1	11.808	0.854	0.357
Error	1548.249	112	13.824		
Total	325023.0	120			
Corrected Total	1685.992	119			

## ***Main Influences***

The main influences of the category variables namely educational qualification (A), gender (B) and monthly income (C) on ecological citizenship behaviour scores are reported below—

### ***First Main Influence (A)***

The first main effect of educational qualification was not significant on ecological citizenship behaviour. This finding could be reported as: there was non-significant main effect of educational qualification on ecological citizenship behaviour [F (1/112)=0.260, P=.611].

### ***Second Main Influence (B)***

The second main effect of gender was not significant on ecological citizenship behaviour. This finding could be reported as: there was non-significant main effect of gender on ecological citizenship behaviour [F (1/112)=.013, P=0.908].

### ***Third Main Influence (C)***

The third main effect of monthly income was not significant on ecological citizenship behaviour. This finding could be reported as: there was non-significant main effect of monthly income on ecological citizenship behaviour [F (1/112)=.618, P=0.433].

***This Result indicates that  $H_{01-a}$ ,  $H_{01-b}$ , and  $H_{01-c}$  are accepted***

## ***Interactional Influences***

The main influences of the category variables namely educational qualification (A), gender (B) and monthly income (C) have already been reported. As the research design is  $2 \times 2 \times 2$  factorial design so the interactional effects are shown by first order interactional effects [(A×B), (A×C) and (B×C)] and second order interactional (A×B×C) effect.

### ***i) First order Interactional Influences (A×B)***

Table-3 indicated a non-significant interaction effect between educational qualifications (A) and gender (B) group. For this, the F-value was found to be 1.200, which was not significant at 0.05 level [F (1/112)=1.200, P=0.276].

### ***ii) First order Interactional Influences (A×C)***

Table-3 indicated a non-significant interaction effect between educational qualification (A) and monthly income (C). For this, the F-value was found to be 0.339, which was not significant at 0.05 level [F(1/112) = 0.339, P = 0.562].

iii) First order Interactional Influences (B×C)

Table-3 indicated a non-significant interaction effect between gender (B) and monthly income (C). For this, the F-value was found to be 1.273, which was not significant at 0.05 level [ $F(1/112) = 1.273$ ,  $P = 0.262$ ].

iv) Second order Interactional Influences (A×B×C)

Table-3 indicated a non significant interaction effect among educational qualification (A), gender (B) and monthly income (C). For this, the F value was found to be 0.854 which was significant at 0.01 level [ $F(1/112) = 0.854$ ,  $P = .357$ ].

***This Result indicates that  $H_{02-a}$ ,  $H_{02-b}$ ,  $H_{02-c}$  and  $H_{02-d}$  are accepted***

The scores obtained from the administration of ecological citizenship behaviour scale showed that the scores are normally distributed around the mean. It is also obvious that the scores of the respondents were not significantly affected by their gender, monthly income or level of education. It is surmised that citizenship behaviour is more affected by motivation, social norms and other situational factors rather than the above mentioned category variables.

From the qualitative data it was found that the respondents are well aware about issues related to environmental problems in the context of domestic waste accumulation and its disposal. The nature of the domestic waste as reported by the respondents mainly consisted of vegetable and food waste (30%), papers (30%), plastic (20%) dust and cinders (15%) and others (5%). The respondents have also reported the various reasons for their inability to carry out proper disposal of the wastes or their segregation. It was stated that although they wanted to segregate garbage but conditions were not conducive. Time constraint was said to be a hindrance. The vats were sometimes inaccessible and door to door garbage collection was not always regular. They were often forced to dump waste in the roadside and the collection by civic authority sometimes faltered. The most important issue was composting which was not done by any member of the sample group. They wanted the corporation authority to take more active part and arrange for enabling conditions so that the citizens can easily treat the garbage in a scientific manner. The findings are in consistent with other researches. Coinstreau (1987) mentioned that in most developing countries proper handling, treatment and disposal of wastes are a serious problem. This research emphasizes that viable waste management depends on two factors environmental education for common people and the government

commitment. The present research findings conducted in a section of Kolkata Corporation area corroborate the earlier findings.

### *Implications*

Man is the worst polluter. The activities of human beings generate many by products which are apparently useless and considered as waste. Consequently the physical environment is threatened as the massive amount of waste gets deposited in to ground water, soil and air (Day, 1998). It plays havoc with the functioning of bio sphere. Modern technology helps to increase waste but it provides little effort in the context of waste management and disposal (Palmer, 1998). Besides, other factors like absence of strong government commitment, stringent rules and regulations encourage citizens to dispose the domestic waste as quickly and conveniently without bothering to find out its repercussion. The littered and unsorted wastes contaminate the streams and rivers posing great health hazards mainly for the poor and slum dwelling people. UNPFA (1999) had also underscored the need for research to acquire knowledge and information pertaining to peoples' current engagement and disenchantment in waste management.

The importance of the study lies in the fact that the ecological citizenship behaviour does not simply means demanding, protesting, acting or debating. It is time people realized that every act of an individual has public fallout which is why citizenship activity should aim at public good. There is an urgent need to restructure their lives for the sake of sustainability and actively engaging themselves in scientific management of domestic waste for environmental protection. This research also addresses the issues like civic body's policies in reference to civic amenities and clean environment. It is to noted that efficient waste management implies waste prevention (an essential responsibility of the householders), minimization of waste, detoxification, waste collection, transfer, transport, storage, waste treatment including waste disposal. However, the responsibility of civic bodies in this respect is more important but education of people and their participation in waste management is no less crucial. Despite having requisite awareness people fail to participate due to the approaches to wastage sorting undertaken by the authority. There is an immediate need to organize forum exhibitions TV campaign and provision of incentives to encourage and nudge people in this respect. Sadly this aspect is missing in our city. The garbage related problems of the city of Kolkata can be tackled if the civic bodies organize more awareness campaigns and media propaganda to educate citizens in issues related to sustainability.

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## Effectiveness of Activity-Based Method of Teaching Life Science over Chalk and Talk Method

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### Abstract

*Effective science teaching-learning process in schools always require direct involvement of the children in acquiring scientific knowledge, concepts and skills because children are by nature active and eager to learn through experiences. The present study was carried out to measure the impact of activity-based method of teaching Life Science on students' achievement at secondary level in comparison to chalk and talk method. One hundred thirty six (136) Life Science students of Class X from two different Schools under WBBSE were selected for the present study. Six different activities were designed and necessary data were collected through self-developed achievement test (reliability = 0.67). Results revealed that the academic achievement of Life Science students become significantly higher ( $t = -7.590$ , significant at  $p \leq 0.05$ ) when the subject is taught through activity-based method (mean achievement Score=16.74) as compared to chalk and talk method (mean achievement Score=11.68). This study may act as a base line study for further in depth study regarding the selection of appropriate teaching methodology in Life Science at Secondary level. It may also provide us the necessary information regarding revision of the existing science curriculum and to implement it in the classroom situation through learners' active participation.*

**Key Words :** *Chalk and Talk Method, Activity-Based Method, Teaching of Life Science*

### Introduction

Now-a-days science has established itself as the most important and integral part of modern human civilization, without contribution of which the rapid growth and development of Nation become impossible. Since Independence, spreading of science as well as scientific literacy in India has been a great challenge. In this context, the National Curriculum Framework (2005)

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mentioned that 'Science Education in India, even at its best, develops competence but does not encourage inventiveness and creativity'. Also, the Indian Education Commission (1966-68) commented in this regard that 'the curriculum places a premium on bookish knowledge and rote learning, makes inadequate provision for practical activities and experiences, and is dominated by examinations, external and internal'. To ensure proper transaction of science curriculum and to achieve its objectives in totality, the choice of appropriate methods and strategies plays significant role. The methods and strategies adapted to teach scientific concepts in classroom should focus on the all-round development of the child so as to make him efficient and useful in this modern scientific society (Das, 1985).

The term 'method' in teaching-learning process typically indicates the process of delivering knowledge or transmitting specific skills to pupils by their teacher (Vaidya, 1996). At National level, the mode of transaction of science curriculum relies mostly on traditional or expository methods of teaching (like lectures, note taking, storytelling, passive reading, passive listening and observation etc.) where the subject content is delivered to the learners in a teacher-centered classroom setting using 'chalk and talk' and/or overhead projector transparencies. The teacher presents learners with the subject matter/knowledge, directs the learners through the lessons, and provides examples illustrating the rules to give contextual elaboration. This process of reception of information has been a popular mode of instruction in science classes for centuries (Lom, 2012). These methods hold few advantages in the schools of Indian scenario where infrastructure is poor, teaching-learning materials are not so available, pupil-teacher ratio is high, time available is very short comparing to the content to be taught, learners are from diverse socio-cultural background etc.

Activity-based teaching methods now become the popular choice by 21st century science teachers in schools. It can be defined as any method or strategy that 'involves students in doing things and thinking about the things they are doing' (Bonwell & Eison, 1991). The core elements of this concept are: 1) introduction of activities into the traditional lecture and 2) promotion of student engagement in the teaching-learning process (Prince, 2004). Problem-based learning, guided inquiry-based learning, role playing, collaborative learning, peer-led team learning, project-based learning, case-based & community-based instructions, course assignments, field studies, small group presentations, simulation exercises, memory games etc. are some popular and frequently used activity-based methods where the learners construct their own knowledge through active participation in teaching-learning process and create their own meaning by linking their existing knowledge with their previous knowledge or

experience (Ahmad, 2011; Davar, 2012). The nature of activities used in these methods can be generalized under three main categories (adapted from Sysoyev, 1999): 1) Exploratory—gathering knowledge, concepts, skills etc.; 2) Explanatory—getting experiences about previously explored concepts, theories, laws, principles etc. by participating actively and finding sequences/patterns behind those; and 3) Expressional—presentation, production, meaningful application of knowledge and experiences etc. Activity-based teaching methods possess several advantages like enhancing reasoning and thinking skills of the learners, increasing students' attention and willingness to respond, generating motivation among them, nurturing creativity, providing better understanding and better retention of concepts through direct observation /experiences, developing scientific attitude, developing habit to investigate scientifically etc.

From the related literatures on activity-based teaching methods and its comparison with traditional methods of teaching, it is observed that considerable amount of studies are conducted so far on activity-based science teaching methods. In the field of teaching-learning of Life Science, Jha (1979) observed that activity-based approach is very effective in teaching high school biology when compared with demonstration method with respect to the acquisition of knowledge, application and development of scientific knowledge. Nwagbo (2006) investigated the relative efficacy of the guided inquiry and the expository teaching methods on the students' achievement in and attitude to biology where the guided inquiry method was proved to be significantly better than the expository method in enhancing their cognitive achievement in biology. It was observed by Wilke & Straits (2001) that students enjoyed active, discovery based problem and believed that discovery helped them gain an understanding of the material and develop different skills. Ohshika (2006) observed that the students participated in the class activities more positively than in usual traditional classroom situation and they had a better understanding about 'Human and Nature'. Also, findings of the study conducted by Dheeraj & Kumari (2013) reflected that mean achievement of the students exposed to co-operative method (activity-based) differed significantly from the mean achievement of the students taught through traditional method in case of teaching Environmental Science.

A number of studies were also conducted on activity-based method of teaching with reference to Physical and Chemical Sciences. Ali et al. (2012) compared the students' achievement taught by lecture method and lecture cum workbook method of teaching general science at elementary level; the result indicated that scores obtained through lecture cum workbook method were higher as compared to lecture method. Ergul et al. (2011) observed that the

use of inquiry based teaching methods significantly enhanced students' science process skills and science attitudes. Igboegwu & Egbutu (2011) investigated the effects of co-operative learning strategy and demonstration teaching method on acquisition of science process skills by Chemistry students, and the findings revealed that students taught using co-operative learning strategy performed significantly better than those taught using demonstration method. Khan *et al.* (2012) observed that the activity-based teaching was more effective for the development of higher order skills in the students of Physics at secondary level when compared with traditional method of teaching. Hussain, Anwar & Majoka (2011) examined the effect of peer group activity-based learning on academic achievement of secondary schools students in Physics and the results indicated that peer group's activity-based learning was more effective for teaching of Physics as compared to traditional lecture method. Udo & Etiubon (2011) investigated the relative effectiveness of computer-based science simulations on students' achievement in chemistry at the secondary level and when compared with guided-discovery and the traditional expository teaching methods; the results reflected that computer simulation is as effective as guided-discovery, but significantly better than the traditional expository method.

Apart from the studies on application of activity-based method of teaching in Science, few other studies were also detected in the field of Mathematics (Emaikwu, 2012; Aremu & Salami, 2013; Azuka, 2013) which yield similar findings where activity-based methods were always found more significant and more effective than traditional or expository or any other method with respect to learners' learning and achievement.

In this background, the present study aims to measure and compare the impact of chalk and talk method and activity based teaching method on students' achievement in Life Science.

### ***Objectives of the Study***

1. To compare the effectiveness of chalk and talk method and activity-based method of teaching Life Science in terms of students' achievement in Life Science at Secondary level.
2. To compare the students' achievement in respect to sex (male and female) for both the methods.

### ***Hypotheses of the Study***

- H<sub>0</sub>1: There is no significant difference in the achievement scores of Life Science students when taught through chalk and talk method and activity-based method.

- H<sub>0</sub>2: There is no significant difference in the achievement scores of male Life Science students when taught through chalk and talk method and activity-based method.
- H<sub>0</sub>3: There is no significant difference in the achievement scores of female Life Science students when taught through chalk and talk method and activity-based method.
- H<sub>0</sub>4: There is no significant difference between the achievement scores of the male and female Life Science students when taught through chalk and talk method.
- H<sub>0</sub>5: There is no significant difference between the achievement scores of the male and female Life Science students when taught through activity-based method.

### Method

#### Sample

The class X students of two Higher Secondary schools (one Boys' school and one Girls' school) in Kolkata constituted the sample of this study. Necessary permissions from the institutional authorities were taken by the researchers to undertake the research work. Total number of students in the sample were 136 (68 boys and 68 girls) who were divided randomly into two groups for the purpose of research; 68 students (34 boys and 34 girls) constituted the control group and other 68 students (34 boys and 34 girls) constituted the experimental group (Table 1).

**Table 1 : Sample of Study**

	Control Group	Experimental Group	Total
<b>Male</b>	34	34	68
<b>Female</b>	34	34	68
<b>Total</b>	68	68	136

#### Tool

An achievement test was constructed by the researchers consisting of 25 test items (full marks-25 and time allotted-40 minutes) that covered important concepts of all the subunits. Initially 40 test items were developed out of which 25 items were finally selected as per the opinions of subject experts regarding the standard of the test items. Reliability of the test was assessed in terms of internal consistency using the K-R formula and reliability coefficients was found to be 0.67.

## Procedure

The Unit 'Ecosystem' of the syllabus of Class X under West Bengal Board of Secondary Education (WBBSE) was selected as the content area. The topic was divided into five subunits: 1) Definition and components of ecosystem, 2) Food chain, 3) Food web, 4) Energy flow and 5) Ecological pyramids. The 'chalk and talk' method was used to teach the students of control group. For the students of experimental group, six activities were planned and developed to teach the same content through activity-based method. The activities designed were: 1) drama, 2) question-answer game, 3) chart making, 4) role playing, 5) model making, and 6) playing bio-ludo as per recommendation obtained from a group of experts regarding: i) the selection of activities, ii) additions and modifications of activities, and iii) the language and planning of those activities. Finally a post test was administered to assess their achievement level.

The research design followed in the study was pretest-posttest groups design. The test was administered to both control and experimental groups after completion of teaching-learning process.

The hypotheses formed earlier were tested through 'independent samples t-test' at the significance level of 0.05 using Statistical Package for the Social Sciences (SPSS) software-version 20.0. Also the graphical representations of descriptive statistics were made using SPSS 20.0 and Microsoft Office Excel 2007.

## Data Analysis and Interpretation

The achievement scores of the students were calculated individually for each student under each method.

**Table 2 : Descriptive statistics**

Method of Teaching	N	Mean		Std. Deviation
	Statistic	Statistic	Std. Error	Statistic
Control group (chalk and talk method)	68	11.68	0.509	4.195
Experimental group (activity-based method)	68	16.74	0.431	3.552

In Table 2, the mean achievement score 16.74 out of 25 for the students of experimental group indicates higher level of achievement comparing to the control group which has mean achievement score of 11.68 only. This difference in the mean score are also presented through the frequency distributions of the scores (Fig. 1) obtained by the students under both the teaching methods.

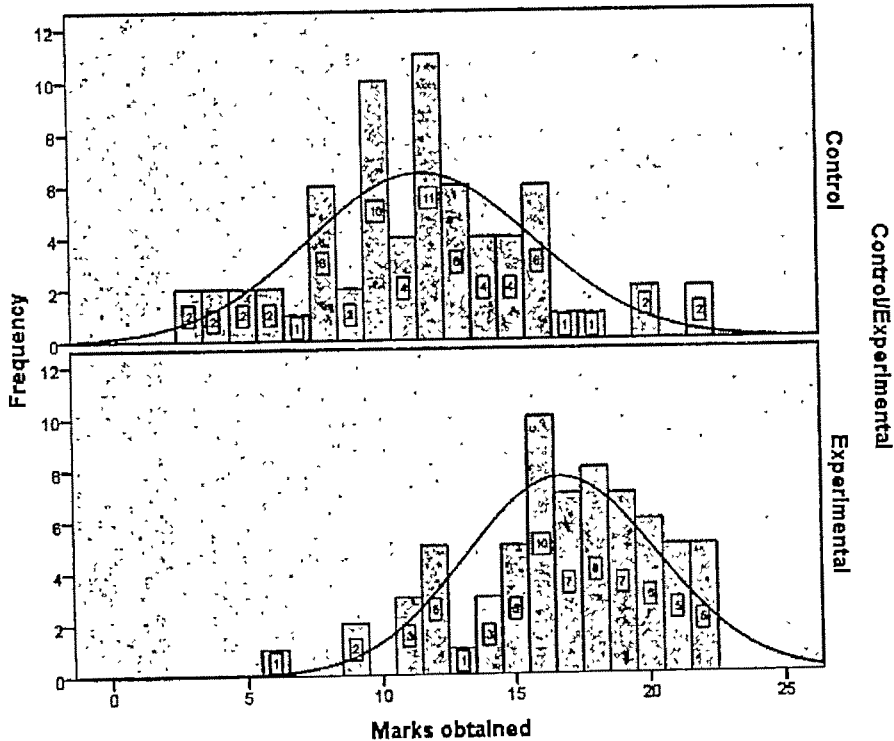


Fig. 1: Comparative frequency graphs of the achievement scores of experimental group (activity-based method) and control group (chalk and talk method)

#### Testing of the hypothesis $H_01$ :

Table 3: Results of independent samples t-tests for the hypothesis  $H_01$

Testing of Hypothesis	Dependent variables	Independent variables	N	Mean	S.D.	df	t-value	Remarks
$H_01$	achievement scores	Teaching strategy	68	11.68	4.195	134	-7.590*	significant at the 0.05
			68	16.74	3.552			

From Table 3, the result of paired samples t-test reflects that the calculated t-value (-7.590\*) is significant at 0.05 level. So it is clear that there exists 'significant' difference between the achievement scores obtained through chalk and talk method and the achievement scores obtained through activity-based method. The null hypothesis  $H_01$  is therefore rejected. The

negative value of  $t$  (-7.590) and also the mean difference value (-5.06) indicate clearly that activity-based teaching method is more effective than chalk and talk method to achieve the desired learning outcomes in Life Science. This observation is adequately supported by several other researchers in the field of Life Science as well as Physical and Chemical Sciences (Jha, 1979; Nwagbo, 2006; Wilke & Straits, 2001; Ohshika, 2006; Dheeraj & Kumari, 2013; Ali et al., 2012; Ergul et al., 2011; Igboegwu & Egbutu, 2011; Khan et al., 2012; Hussain, Anwar & Majoka, 2011; Udo & Etiubon, 2011). Similar findings were also reported by the researchers of Social Studies, Education and Literature (Khalid & Azeem, 2012; Edinyang & Ubi, 2012; Begum, 2012; Fallon, Walsh & Prendergast, 2013; Umer & Siddiqui, 2013).

**Testing of the hypotheses  $H_02$  and  $H_03$  :**

**Table 4 : Results of independent samples t-tests for the hypotheses  $H_02$  and  $H_03$**

Testing of Hypothesis	Dependent variables	Independent variables	N	Mean	S.D.	df	t-value	Remarks
$H_02$	scores of male Life Science students	Teaching strategy	34	9.65	4.270	66	-6.929*	significant at the 0.05 level
			34	16.59	3.986			
$H_03$	scores of female Life Science students	Teaching strategy	34	13.71	3.000	66	-4.285*	significant at the 0.05 level
			34	16.88	3.112			

From the Table 4, the results of independent samples t-tests reveal that both the t-values calculated (-6.929\* and -4.285\*) to test the hypotheses  $H_02$  and  $H_03$  are 'significant' at  $p \leq 0.05$  level. Therefore the null hypotheses  $H_02$  and  $H_03$  are rejected. In both the cases for male and female Life Science students, the mean achievement scores obtained through activity-based method are significantly higher than chalk and talk method. The differences in the achievement scores can also be observed through the comparative line graphs (Fig. 2 and Fig. 3). This indicates the greater effectiveness of activity-based method in academic achievement of both sexes of Life Science students.

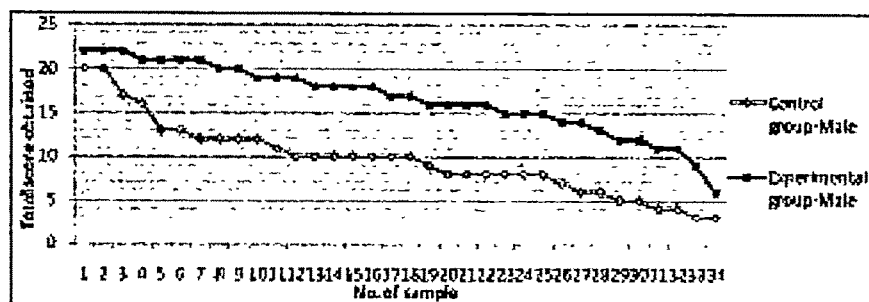


Fig. 2 : Comparative distribution of the achievement scores obtained by male Life Science students of experimental group (activity-based method) and control group (chalk and talk method)

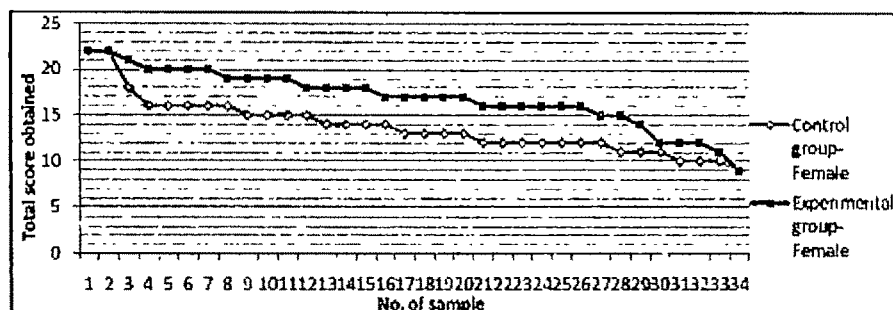


Fig. 3: Comparative distribution of the achievement scores obtained by female Life Science students of experimental group (activity-based method) and control group (chalk and talk method)

Testing of the hypotheses  $H_04$  and  $H_05$ :

Table-5 : Results of independent samples t-tests for the hypotheses  $H_04$  and  $H_05$

Testing of Hypothesis	Dependent variables	Independent variables	N	Mean	S.D.	df	t-value	Remarks
$H_04$	scores obtained by control group	Gender	34	9.65	4.270	66	-4.535*	significant at the 0.05 level
			34	13.71	3.000			
$H_05$	scores obtained by experimental group	Gender	34	16.59	3.986	66	-0.339	not significant at the 0.05 level
			34	16.88	3.112			

From Table 5, the results of independent samples t- test reflect that the t-value calculated to test the hypothesis  $H_{04}$  is 'significant' at  $p \leq 0.05$  level of significance ( $t = 4.535^*$ ), but the calculated t-value becomes 'not significant' in case of experimental group (hypothesis  $H_{05}$ ;  $t = -0.339$ ). Therefore the null hypothesis  $H_{04}$  is rejected whereas the other null hypothesis  $H_{05}$  is accepted. These findings indicate that although significant difference appears between male and female students during learning through chalk and talk method, the activity-based method appears to be perfect to provide the necessary scientific information and concepts to both sexes of the students almost equally and therefore, no significant difference is found between the mean scores of male and female Life Science students (16.59 and 16.88 respectively). Another set of comparative frequency graphs (Fig. 4) supports the aforementioned findings in more effective ways where these mean scores of both sexes under experimental group are observed to lie almost in the same line of the graph.

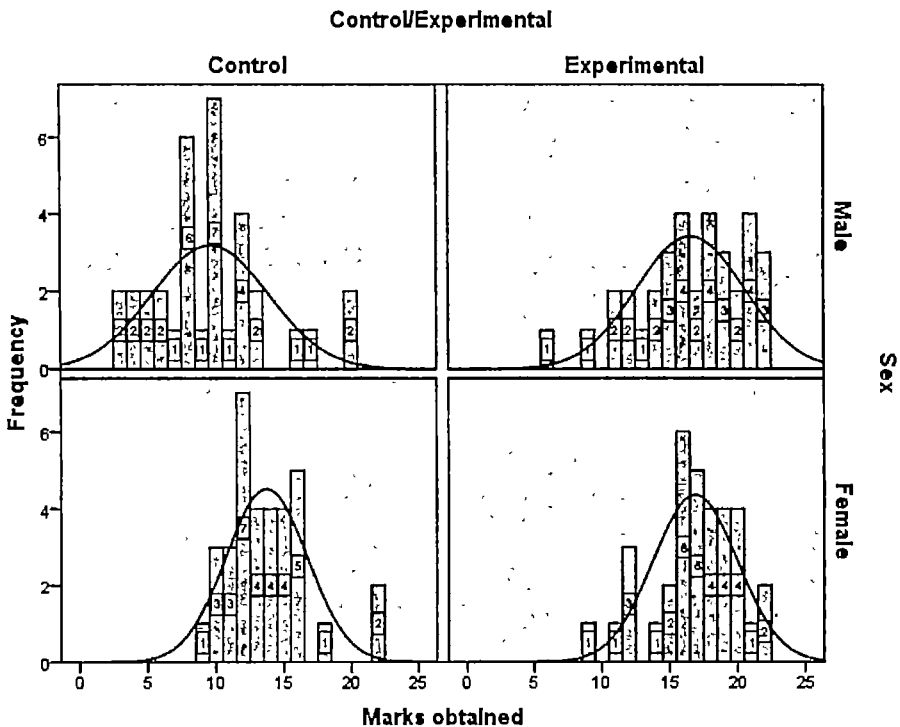


Fig. 4: Comparative frequency graphs of the achievement scores of male and female Life Science students under experimental group (activity-based method) and control group (chalk and talk method)

## ***Conclusion***

Statistical analysis of the achievement scores revealed that activity-based teaching method is more effective than chalk and talk method to teach science in the classroom situation ( $t = -7.590$ ). Furthermore it also revealed that activity-based method is almost equally facilitates learning of both male and female Life Science students. Similar findings were also observed by several other researchers where the advantages of activity-based Life Science teaching methods over other traditional methods were clearly reported (Jha, 1979; Nwagbo, 2006; Wilke & Straits, 2001; Ohshika, 2006; Dheeraj & Kumari, 2013). This happens because in a traditional classroom, a teacher usually holds an opinion that the most industrious students are those who passively soak up all the facts and figures presented by the teacher during teaching didactically (Ranganath, 2012). So, when any defect arises in the process of this passive absorption, learning becomes incomplete. Also, the pace and pattern of this type of passive learning varies among students. Another dangerous problem may arise in the form of 'misconceptions' as a result of this passive learning. Thus, chalk and talk method does not motivate the learners as much to learn science through diverse hands-on activities and therefore, does not satisfy the aims and objectives of science teaching.

To change this kind of science teaching-learning situation, activity-based teaching methods and strategies are being recommended widely. National Curriculum Framework (2005) suggested that 'the child should be engaged in learning the principles of science through familiar experiences, working with hands to design simple technological units and modules'. The Right of Children to Free and Compulsory Education Act (2009) also specified that 'learning through activities, discovery and exploration in a child-friendly and child-centered manner' should be ensured in curriculum and evaluation procedures. In order to maintain the standard of science education in India, National Curriculum Framework (2005) recommended the Interpretation Construction (ICON) model in creating 'Constructivist' learning situation in schools where the students should develop their own knowledge through subjective experiences. In India, the concept of Activity-Based Learning (ABL) was first introduced in 2003 by the Chennai Corporation in 13 schools on a trial basis in the Corporation Schools of Chennai and later it has been adopted by all the 270 primary schools in the district hoping to change the face of primary education in Tamil Nadu (Thangavelu, 2006). ABL has also been successfully implemented in other Indian states like Karnataka, Kerala, Uttar Pradesh, Gujarat and Madhya Pradesh.

Though the existing Life Science curriculum in India supports ample scopes to incorporate several activities to provide fundamental biological concepts to

the learners accurately, proper infrastructural facilities required to conduct activities are not being provided in most cases. Also many of the Life Science teachers do not express proper attitude towards developing the skills necessary for activity-based teaching. The science teachers should utilize the activity-based teaching methodologies the fullest to overcome this existing degraded situation of science teaching-learning. During teaching, they should always keep in mind the opinion of Confucius who stressed on activities as the key to successful teaching-learning process through his famous dictum: “*I hear and I forget, I see and I remember, I do and I understand*”

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## Error Analysis in Mathematics in Relation to Secondary School Students

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### Abstract

*Error analysis involves analysis of error patterns in order to identify difficulties that students have with facts, concepts, strategies, and procedures. Identifying the type of error allows teachers to address the needs of the learners more efficiently. The issue which has been dealt in this paper is the nature of mathematical errors committed by secondary schools students. The data sources are 159 candidates of class VI–VIII belonging to two schools of Kolkata, appearing in annual examination, 2010. The results reveal that the occurrence of conceptual error is the highest among the students. The study recommends that appropriate remediation instructional strategies should be applied for eliminating the different kinds of errors made by the secondary students in mathematics.*

**Key Words :** *Mathematical Errors, Secondary Students*

### Introduction

If mathematics is to play an expected role in the present day of science and technology, then there is dire need to overhaul the teaching of this delicate subject on right lines. In spite of great efforts by our experts, mathematicians, psychologists, and teachers, a large number of students are not able to understand the basic concepts of it. Because of lack of basic understanding, they grasp certain methods, statements, theories, and so forth instead of grasping the spirit of the subject. As a result, students commit errors. In the present day, the examination results of different school boards of India in general and West Bengal in particular are not much satisfactory in respect of mathematics. It is expected that the students must have adequate knowledge of the basic topics of secondary school mathematics. It can be easily understood that student who is weak in basic conceptual knowledge of the topics will be poor in mathematics in general and commit errors in solving problems (Kaur, 2011). Radatz (1979) proposed a general classification of student errors based on information-processing theory.

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Marshall (1983) extended that theory and classification for the domain of sixth-grade arithmetic. Both Radatz's and Marshall's schemes included five general error categories in mathematics: errors in (i) processing language information, (ii) interpreting spatial information, (iii) selecting appropriate procedures, (iv) making concept associations, and (v) using irrelevant rules or information. Marshall and Smith (1987) defined two new categories of errors namely, errors in using incorrect rules and errors in failing to give attention to cognitive processing demands. Elbrink (2008) classified students' mathematical errors into three main categories: calculation errors, procedural errors, and symbolic errors. Calculation errors can be generalized as mistakes in addition, subtraction, multiplication, and division of numbers. Procedural errors occur when a student computes or applies a procedure incorrectly. Symbolic errors occur when students falsely relate mathematical problems that use similar symbols. Students try to create meaning in the patterns of mathematical symbols and signs that they see in front of them rather than trying to understand what they are actually doing. This search for patterns in the symbols leads to misinterpretations, which in turn result in mathematical errors (Elbrink, 2008).

Ginsburg (1987) was of the opinion that the common types of error patterns for the basic operations include number fact errors, "slips", and "bugs". Number fact errors occur because a student has not mastered the basic facts. "Slips" refer to errors made due to lapse in memory or due to impulsivity. These errors usually do not indicate misunderstanding. They usually occur because of particular learning characteristics possessed by a student (e.g., memory deficits, impulsivity, and visual/motor integration problems). "Bugs" are most serious because they indicate that a student is systematically using an inaccurate/inefficient procedure or strategy. Typically, this type of error pattern indicates poor understanding of an important mathematical concept (Ginsburg, 1987).

In their meta-cognitive approach, Subramaniam and Ramsingh (1996) claimed that primary school students commit six types of errors in addition, eight types of errors in multiplication, and six types of errors in division. It was found that the poor concept of carrying over, of multiplication, incomplete understanding of zero, introvert behaviour, lack of writing skills, and so forth, are the possible causes of errors committed by students. Based on Minimum Levels of Learning (MLL) competencies, most of the errors of primary school students occurred due to a process of dualism, that is, a different rule when zero is involved; as seen in case of place value, subtraction, and multiplication. Major aspects of response error were rooted in an alternative understandable pattern of rules. Errors were the result of incorrect induction from examples. Errors triggered due to inadequacy of language used in the definition, rules or procedure names (Pal, Pradhan, & Natarajan, 1997).

Paria (1999) made an attempt to search the origin of errors committed by higher secondary students in selected topics of mathematics. It was found that the main errors identified were conceptual and computational difficulty in the selected topics. Students were seen to face difficulty in applying the laws of indices. The errors originated due to certain teacher and learner factors. Firstly, the teachers were often unaware of the necessary and sufficient background knowledge of their students before teaching a particular topic; and secondly, the students often failed to remember formulae, key concepts, and relation between the earlier topics. This ignorance prevented them from understanding the current topics properly. Sometimes, students were not conversant or were unaware of the theory, basic principles and their operations. Moreover, they were also found to make errors in application of the concepts.

Occurrence of errors may be sometimes due to the fact that students are not aware of the use of numeration table, which serves as a pillar for understanding of place value concept, changing fraction into decimals, and so forth (Bhatia, 1998). Titus (2011) sought to determine the error patterns of developmental mathematics college students in real number computations and in addition. Most of the students demonstrated a fragmented understanding of signed-number in arithmetic (negative numbers), sign errors, fractional errors, and exponential errors in simplifying both arithmetic and algebraic expressions. The students also misinterpreted operations and executed buggy algorithms both arithmetically and algebraically. It was opined that any remediation programme should go beyond students' procedural errors to the aspect of "conceptions".

There are several related studies on the stability and intransigence of students' errors in arithmetic. In particular, Brown and Burton (1978), Brown and VanLehn (1980), and Young and O'Shea (1981) studied subtraction errors of elementary school children. Tatsuoka (1984) investigated addition errors at the same level. All these researchers reported that most of the observed errors occurred due to incorrect rules rather than due to erroneous facts of arithmetic. Moreover, they also found that students tended to be consistent, at least over several similar items on one test. It has been suggested that people who do not appreciate the importance of conceptual understanding in mathematics, seeing it as a subject to be performed mechanically and by rote, are more prone to conceptual difficulties with mathematics (Giangrasso, 1981).

Effects of grade and gender have been noticed on mathematical errors committed by students. According to Goel (1996), numbers of errors committed by children in different grades vary significantly and difficulties were mainly due to incorrect conceptualisations, inability to master basic facts, and the use of incorrect operation while solving the problem. Boys and girls differed in committing errors on selected topics of ninth-grade mathematics (Kaur, 2011).

They made different errors on multiple-choice mathematics items which gave some understanding of the cognitive processes that generate the errors (Marshall & Smith, 1987).

From the foregoing discussion, it is apparent that secondary school students make many common errors in mathematics. As a result, it is important to address and analyze the nature of mathematical errors and cite suitable examples. It is also necessary to know that which type of error is most prevalent among our students so that measures can be adopted to overcome it. Hence, a systematic enquiry is needed to explore the types of errors committed by secondary school students in mathematics. Based on this background, the objective of the present study is to address and analyze the different types of errors that these students commit in different areas of mathematics, that is, algebra, arithmetic, and geometry.

### ***Method***

#### **Sample**

Answer scripts of 159 candidates studying in class VI–VIII were selected for content analysis. The profile of the candidates, whose answer scripts were examined in the study were as follows:

**Table 1 : Profile of Candidates Whose Answer Scripts  
Were Selected for Error Analysis**

School	Type	Affiliation	Number of Examinees in Class VI	Number of Examinees in Class VII	Number of Examinees in Class VIII	Total
A	For Boys	WBBSE	28	32	38	98
B	For Girls	WBBSE	23	18	20	61
Total			51	50	58	159

The answer scripts had previously been graded by the respective teachers of mathematics.

### ***Procedure***

In order to study the pattern of errors committed by the students of classes VI, VII, and VIII, answer scripts of mathematics of annual examinations, 2010 from two government aided Bengali medium schools of Kolkata were obtained. One of the schools was for boys and the other for girls. These two schools were purposively chosen for their consistent poor results in Madhyamik Examination. It was assumed that the occurrence of errors might be more prevalent among the students in low graded schools and if a general pattern in the nature of errors can be found out, it will help the teachers to plan the teaching-learning activities accordingly. The objective of the work was explained to the head of the institutes

and they were assured that the identity of the schools would be kept in strict confidentiality. Then with their permission, the mathematics teachers of the schools teaching in classes VI, VII, and VIII were approached and the answer scripts (already evaluated by the teachers) were collected. The questions were classified into different areas of mathematics, that is, algebra, arithmetic, and geometry. After thorough scrutiny of responses, the errors were codified into the following categories, namely, conceptual error, calculation error, copying error, and geometrical construction error. Sometimes there were multiple errors in an answer to the same question, which could possibly belong to the same or different categories. Codification of errors was done across the following categories: Identity of school (A or B), class (VI, VII, or VIII), number of questions not attempted for each area of mathematics, and number of errors of each type for each area of mathematics.

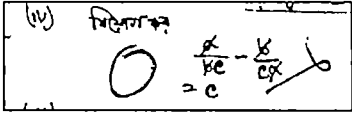
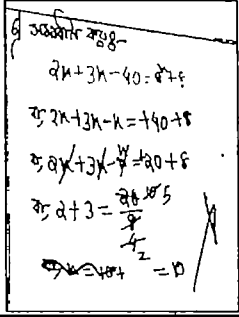
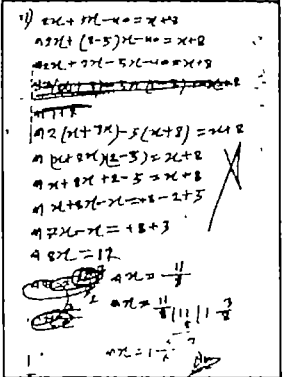
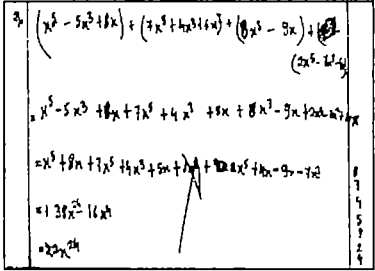
### Result

The different types of errors committed by students of mathematics were studied through the analysis of the data set on evaluation of annual examinations of two schools for classes VI, VII, and VIII. The following are some examples of different types of errors. This list is indicative, and need not be regarded as an exhaustive one.

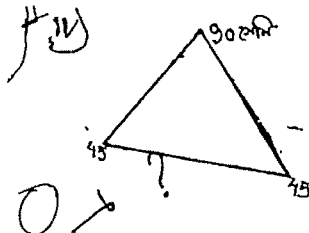
<i>Conceptual Error</i>			
General			
Type of Error	Question	Expected Response	Student Response
Lack of understanding instruction	Fill in the blank : $a^2 + b^2$ $=$ _____ (i) $(a + b)^2 - 4ab$ (ii) $(a + b)^2 + 2ab$ (iii) $(a + b)^2 - 2ab$  (iv) $(a + b)^2 + 4ab$	(iii) $(a + b)^2 - 2ab$	<i>Answer given :</i> (i) $(a + b)^2 - 4ab$ $= a + b^2 - 4ab$ $= -2ab$ (ii) $(a + b)^2 + 2ab$ $= a + b^2 + 2ab$ $= a + a + b^2 + 2b$ $= 4ab$ (iii) $(a + b)^2 - 2ab$ $= a + b^2 - 2ab$ $= a - 2a - b^2$ $= -0ab$ (iv) $(a + b)^2 + 4ab$ $= a + b^2 + 4ab$ $= 4ab$

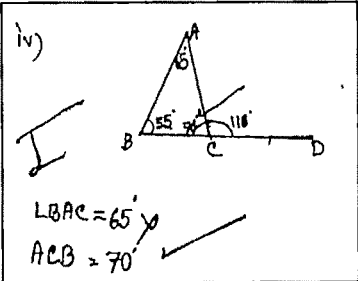
			<i>Analysis:</i> Misunderstood the options as different parts of the questions each of which required an answer
Comprehension error – meaning of questions	Arrange the values in increasing order: -15, 5, -17, 10, -2	-17, -15, -2, 5, 10	<i>Answer given :</i> 49 <i>Analysis :</i> (i) Lack of knowledge about place value of numbers (ii) Added all the numbers
Expressional error	Determine the number of sides of a regular polygon with each internal angle measuring $165^\circ$	$x = \text{number of sides}$ $\frac{180(x-2)}{x}$ $= 165$ or, $x = 24$	<i>Answer given :</i> Number of sides is $165 - 2 = 163$ <i>Analysis :</i> Possibly due to lack of understanding took resort to some arbitrary algorithm
Procedural error	(i) Simplify the expression $25.7 - 10.9$	$\begin{array}{r} 25.7 \\ - 10.9 \\ \hline 14.8 \end{array}$	<i>Answer given :</i> $\begin{array}{r} 25.7 \\ - 10.9 \\ \hline 15.8 \end{array}$ <i>Analysis :</i> Presence of bugs
	(ii) Find out the H.C.F of $\frac{2}{5}$ and $\frac{7}{10}$	H.C.F of $\frac{2}{5}$ and $\frac{7}{10}$ $= \frac{\text{H.C.F of 2 and 5}}{\text{L.C.M of 5 and 10}}$ $= \frac{1}{10}$	<i>Answer given :</i> H.C.F of $\frac{2}{5}$ and $\frac{7}{10} = \frac{4+7}{10}$ $= \frac{11}{10} = 1\frac{1}{10}$ <i>Analysis :</i> Faced difficulty in applying the process skills demanded by the selected strategy
	(iii) Convert 4.72 into a fraction	4.72 $= 4\frac{72}{100}$ $= 4\frac{18}{25}$	<i>Answer given :</i> 4.72 $= 472 - 4$ $= \frac{468}{90} = \frac{156}{30} = \frac{78}{15} = \frac{26}{5} = 5\frac{1}{5}$ <i>Analysis :</i> Incorrect conversion of the decimal number into fraction

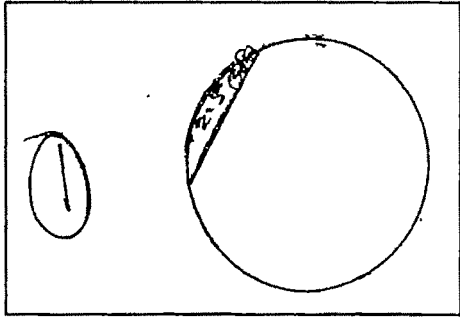
	(iv) Compute square root of 225 through factors	$\sqrt{225}$ $= \sqrt{5 \times 5 \times 3 \times 3}$ $= 5 \times 3$ $= 15$	<p><i>Answer given :</i></p> $\sqrt{225}$ $= \sqrt{50 \times 50 \times 50 \times 50}$ $= 50 \times 50$ $= 100$ <p><i>Analysis :</i> Lack of understanding and incorrect procedure</p>
	(v) Factorize $100x^2 - 121y^2$	$100x^2 - 121y^2$ $= (10x + 11y)(10x - 11y)$	<p><i>Answer given:</i> <math>100x^2 - 121y^2</math>  <math>= 25x^2 - 71y^2 = 54x^2y^2</math>  <i>Analysis :</i>  Lack of understanding and incorrect procedure</p>
	(vi) Simplify $(2x + 9)(x - 7) - (x + 21)(x - 3)$	$(2x + 9)(x - 7) - (x + 21)(x - 3)$ $= x^2 - 23x$	<p><i>Answer given :</i></p> $(2x + 9)(x - 7) - (x + 21)(x - 3)$ $= 11x - 7x - 21x - 3x$ $= 4x^2 - 21x - 3x$ $= -17x^2 - 3x$ $= +20x^3$ <p><i>Analysis:</i>  (i) Added <math>2x</math> to <math>9</math>  (ii) Multiplied <math>x</math> with <math>21</math> and <math>3</math> respectively</p>
<b>Algebra</b>			
Type of Error	Question	Expected Response	Student Response
Placement error	Arrange the numbers in increasing order : $-1, +15, -2, 0, +7$	$-2, -1, 0, +7, +15$	<p><i>Answer given :</i></p> $0, -1, -2, +7, +15$ <p><i>Analysis :</i> Lacked knowledge of place value of positive and negative numbers</p>

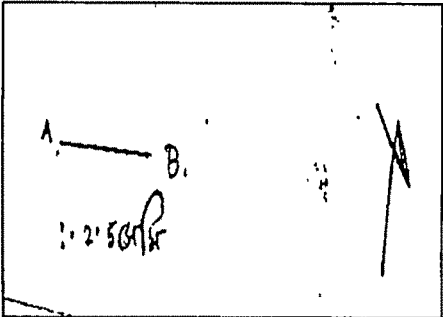
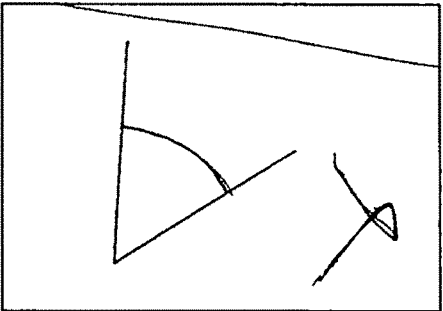
Wrong algorithm – algebraic operations	Subtract : — — — — — — = ——— = ——— = ———	— — — = ——— = ——— = ———	<p>Answer given :</p>  <p>Analysis :</p> <p>(i) Incorrect cancellation (ii) Incorrect operation</p>
Solution error – algebraic equation	Solve $x$ from the equation $2x + 3x - 40 = x + 8$	$2x + 3x - 40 = x + 8$ or, $2x + 3x - x = 8 + 40$ or, $4x = 48$ or, $x = 12$	<p>Answers given:</p> <p>(a)</p>  <p>(b)</p>  <p>Analysis :</p> <p>Incorrect algorithm</p>
Operation error – handling of exponents	Add : $x^5 - 5x^3 + 8x$ , $7x^5 + 4x^3 + 5x$ , $8x^3 - 9x$ , $2x^5 - 7x^3 - 4x$	$(x^5 - 5x^3 + 8x)$ + $(7x^5 + 4x^3 + 5x)$ + $(8x^3 - 9x)$ + $(2x^5 - 7x^3 - 4x)$ = $x^5 - 5x^3 + 8x + 7x^5 + 4x^3 + 5x + 8x^3 - 9x + 2x^5 - 7x^3 - 4x$ = $x^5 - 5x^3 + 8x + 7x^5 + 4x^3 + 5x + 8x^3 - 9x + 2x^5 - 7x^3 - 4x$	<p>Answer given :</p> 

		$4x^3 + 5x + 8x^3 - 9x + 2x^5 - 7x^3 - 4x = 10x^5$	<b>Analysis :</b> Added co-efficients of all the terms and separately added the exponents
<b>Arithmetic</b>			
<b>Type of Error</b>	<b>Question Expected</b>	<b>Response Student</b>	<b>Response</b>
Encoding error	At what construction cost of a wooden bridge a contractor would make 22% profit out of a Rs. 30500	contract? $x + 22\%$ $x = 30500$ or, $x = 25000$	<b>Answer given :</b> (a) Set up the equation for the construction cost (x) as $x/22 = 30500/100$ (b) Set up the equation as $x/100 = 30500/22$ <b>Analysis :</b> Was unable to construct a equation from the problem sum and encoding the answer in an acceptable written form
Technical error	What will be the selling price to make 5% profit out of an item bought for Rs. 200?	Rs. $\frac{105}{100} \times 200$ Rs. 210	<b>Answer given :</b> $\frac{x}{5} = \frac{200}{100}$ or, $x = \frac{5 \times 200}{100}$ or, $x = 10$ <b>Analysis :</b> Concept of the term "selling price" was unclear. Calculated only the amount of profit. However, the calculation was correct.

Geometry			
Type of Error	Question	Expected Response	Student Response
Visual error—geometrical definitions	All of the angles in an equilateral triangle are (a) acute angles, (b) right angles, (c) obtuse angles, (d) $180^\circ$	(a) acute angles	<p>Answer given :</p> <p>(b) right angles</p> <p>Analysis :</p> <p>Lack of spatial representation and understanding of different geometrical figures.</p>
Application error	What will be the sum of the two smaller angles of a right angled triangle?	$90^\circ$	<p>Answer given :</p>  <p>Analysis :</p> <p>(i) Incorrect figure due to lack of visualization</p> <p>(ii) As a result of (i) could not solve the problem</p>
Reproduction error	Prove that the diagonals of a parallelogram bisect one another.	—	<p>Analysis :</p> <p>Took the usual path of establishing congruence of a relevant pair of triangles, but after showing equality of appropriate pairs of angles, tried to round up the proof by showing equality of a completely irrelevant pair of sides.</p>

CALCULATION ERROR		
Algebra		
Question	Expected Response	Student Response
Compute the H.C.F of $4a^2b^2$ and $6a^3bc^2$	$4a^2b^2 = 2.2.a.a.b.b$ $6a^3bc^2 = 2.3.a.a.a.b.c.c$ H.C.F = $2 a^2b$	<p>Answer given :</p> <div style="border: 1px solid black; padding: 5px; margin: 10px;"> <p>5.(b) <math>4a^2b^2 = 2.2.a.a.b.b</math> ✓  <math>6a^3bc^2 = 2.3.a.a.a.b.c.c</math> ✓  H.C.F = <math>2a^2b</math></p> </div>
Arithmetic		
Question	Expected Response	Student Response
Add $3\frac{2}{3}$ and $4\frac{1}{7}$	$3\frac{2}{3} + 4\frac{1}{7}$ $= \frac{11}{3} + \frac{29}{7}$ $= \frac{77+87}{21}$ $= \frac{164}{21} = 7\frac{17}{21}$	<p>Answer given:</p> <div style="border: 1px solid black; height: 150px; width: 100%; margin: 10px;"></div>
Geometry		
Question	Expected Response	Student Response
Compute two angles of a triangle when an exterior angle is $110^\circ$ and one of the interior angles is $55^\circ$	$55^\circ$ and $70^\circ$	<p>Answer given :</p> <div style="border: 1px solid black; padding: 10px; margin: 10px;"> <p>iv)</p>  <p><math>\angle BAC = 65^\circ</math>  <math>\angle ACB = 70^\circ</math></p> </div>

COPYING ERROR		
Type	Question	Student Response
From the question paper	(i) In 63 litre of dettol water, the ratio of water and dettol is 20:1. What is the amount of water and dettol in that mixture?	<i>Analysis :</i> The ratio of two liquids was copied in reverse order which led to a wrong answer.
	(ii) Simplify : $-8 - [-9 - \{-7 - (-9 + 4)\}]$	<i>Analysis :</i> Copied the sum as $-8 - [-9 - \{-7 + (-9 + 4)\}]$ which led to a wrong answer
From one step to the next	Solve $x$ from the equation $2x + 3x - 40 = x + 8$	<i>Analysis :</i> Re-wrote the equation as $2x + 3x - x = 8 - 40$ . The eventual answer was correct for this wrongly copied equation
CONSTRUCTION ERROR		
Question		Student Response
Draw a circle with radius 2.5cm		<p><i>Answer given :</i></p>  <p>(a)</p>

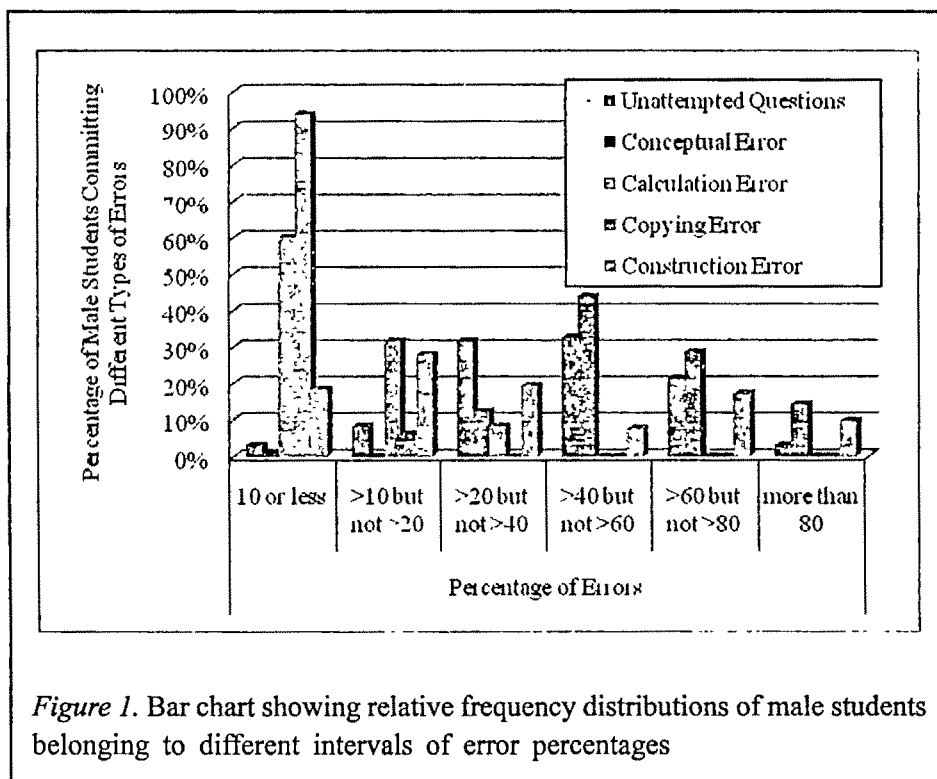
	<div>(b)</div>  <div>(c)</div>  <p><i>Analysis :</i></p> <ul style="list-style-type: none"> <li>(i) Could construct a circle or was unaware of the method of construction</li> <li>(ii) Failed to relate the problem with conceptual knowledge</li> <li>(iii) Lack of spatial representation</li> </ul>
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Based on the above examples of the different types of error, percentage of occurrence of each type of these errors was calculated. Since the number of questions for the different classes was different, the number of errors of each category was expressed as a percentage of the total number of questions *attempted*. These percentages were then grouped into six intervals: namely, 10 or less, more than 10 but not more than 20, more than 20 but not more than 40, more than 40 but not more than 60, more than 60 but not more than 80, and more than 80.

Unattempted questions were regarded as a separate category of error and

the number of such questions was expressed as a percentage of the *total* number of questions.

The relative frequency distribution of male students (belonging to school A) corresponding to different intervals of error percentages are plotted simultaneously in the bar chart of Figure 1. Each colour represents a different type of error.



It is clear that most of the male students committed less than or equal to 10 percent of copying and calculation errors. However, conceptual errors occurred much more frequently. About 90 percent of the students committed more than 40 percent of conceptual error. About 40 percent of students committed more than 60 percent of conceptual error. Geometrical construction error was more evenly distributed than the other types of errors. Percentage of unattempted questions varied widely among the students, ranging mostly from 20 to 80 percent.

The relative frequency distribution of female students (belonging to school B) for different intervals of error percentages are plotted simultaneously in the bar chart of Figure 2. The different types of errors are represented by different colours.

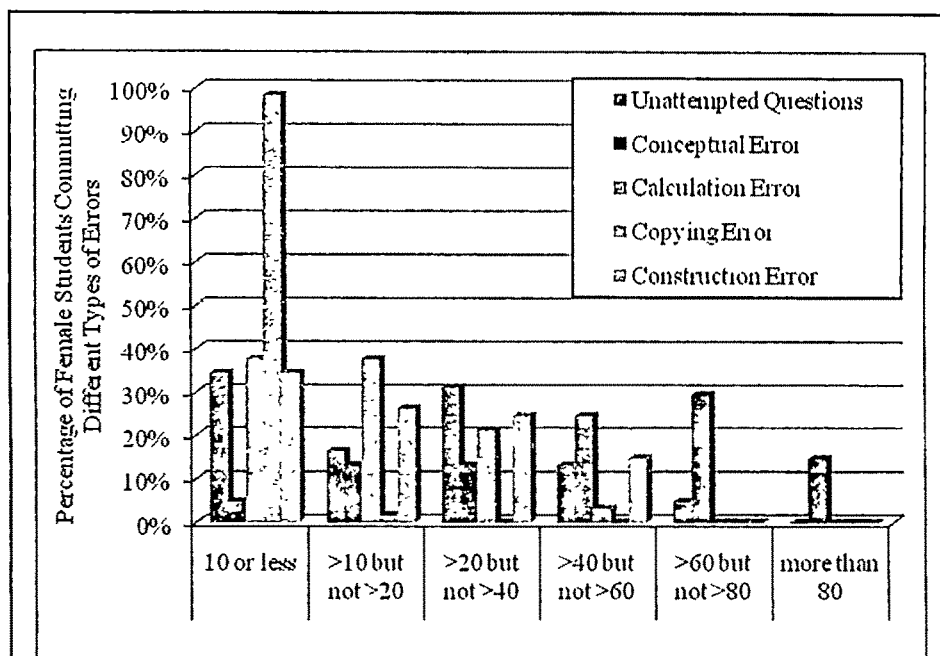


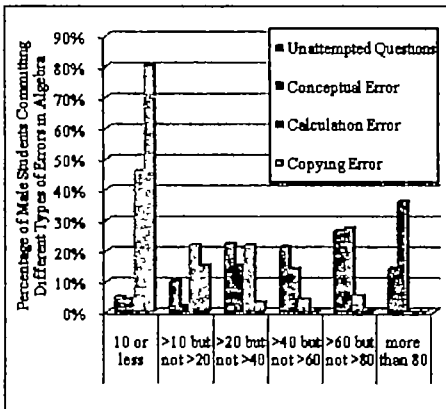
Figure 2. Bar chart showing relative frequency distributions of female students belonging to different intervals of error percentages

The figure shows that almost all the female students committed less than 10 percent of copying errors and less than 40 percent of calculation error. The percentage of conceptual errors varied widely across the students. Geometrical construction errors also varied widely but were less prevalent than conceptual errors. There was no clear pattern among the unattempted questions.

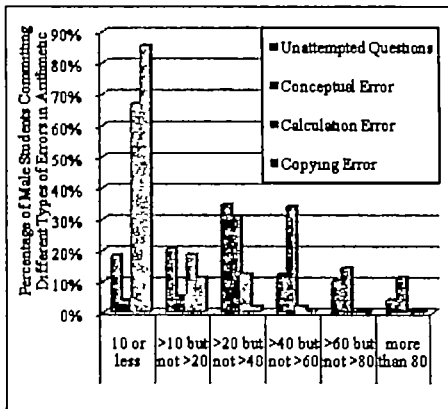
For errors committed by the students in different areas of mathematics, Figures 3 (a, b, c) show the relative frequency distributions similar to Figure 1 for male students, but restricted to the areas of algebra, arithmetic, and geometry respectively. Figures 4 (a, b, c) exhibit the corresponding relative frequency distributions for the female students similar to Figure 2.

The two sets of bar charts generally show consistent patterns matching those of Figure 1 and 2 respectively. The dearth of calculation errors in geometry as evident from Figure 3 (c) and 4 (c) only reflects the fact that there is little scope for such errors in geometry.

(a) Algebra



(b) Arithmetic



(c) Geometry

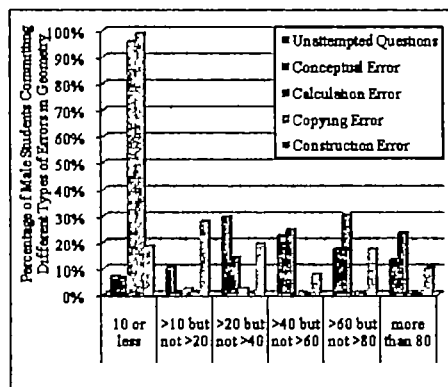
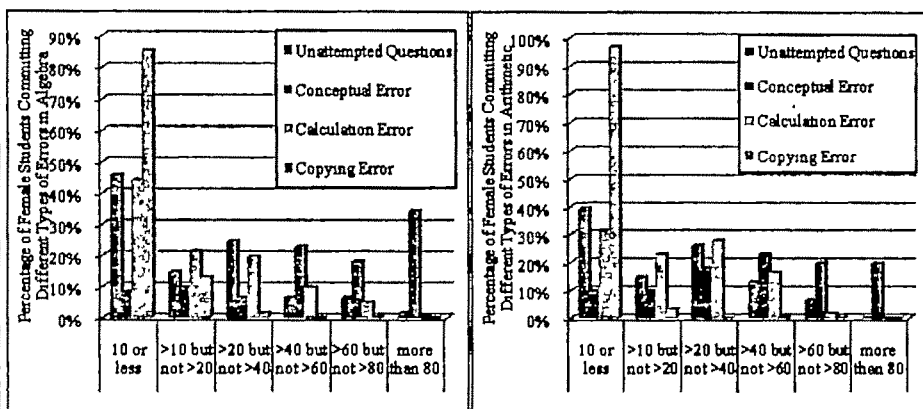


Figure 3. Bar chart showing relative frequency distributions of male students belonging to different intervals of error percentages, for different areas of mathematics

(a) Algebra

(b) Arithmetic



(c) Geometry

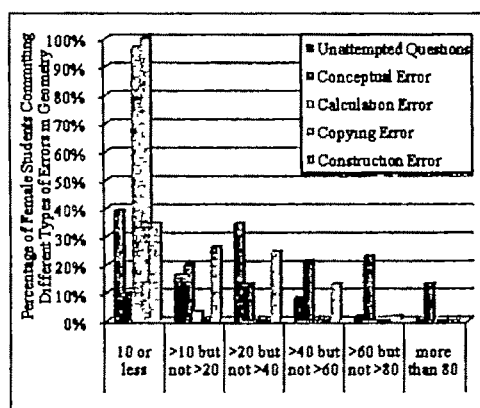


Figure 4. Bar chart showing relative frequency distributions of female students belonging to different intervals of error percentages, for different areas of mathematics

## Discussion

Results of the present study indicate that conceptual error is most prevalent among the secondary students. According to Kloosterman (1994) students who believe that mathematics learning requires memorization are likely to put their efforts into memorizing as opposed to understanding mathematical formulae and procedures. This can be a reason why students commit conceptual errors. Apart from conceptual errors, the study also shows that secondary school students

commit calculation, copying, and construction errors as well. Carelessness and lack of attention can result in calculation errors. Occurrence of procedural errors suggests that students do not understand the concept related to the procedure and often fail to associate knowledge with context. As a result, students do not have an understanding of why or how a procedure works and do not recognize the importance of applying and computing the procedure correctly (Elbrink, 2008). Commitment of similar types of errors has been mentioned by Dale and Griffith (1965). In their study on junior school students of a grammar school in England, it was explained that the Schonell Diagnostic Arithmetic Tests (Schonell, 1951) served to throw a strong light on specific deficiencies of students. The case studies showed that one girl always multiplied wrongly by nought; a boy and another girl were wrong in every sum requiring multiplication by double figures; two other boys had considerable trouble with graded multiplication as well; another made persistent and consistent blunders in his multiplication tables (e.g.,  $8 \times 7 = 57$ ), another boy and girl always left out noughts in the answer when dividing (e.g.,  $1515 \div 5 = 33$ ) (Dale & Griffith, 1965).

Repetition of the same types of error seems to indicate that the pupil has not mastered the facts or the process, while inconsistency of error indicates lack of continued attention (Schonell, 1951). Some researchers suggested the use of metacognition. Kembitzky (2010) opined that participants indicated that using ERNIE (acronym for E<sup>R</sup>ror a<sup>N</sup>alys<sup>I</sup>s)

- (i) improves their comprehension of the concept;
- (ii) enhances their metacognitive abilities concerning their errors;
- (iii) are complementary to different learning styles; and
- (iv) prevents the repetition of the misconception.

Poor organisational ability of students' geometric knowledge results in their poor problem solving performance (Lawson & Chinnappan, 2000). Eliminating mathematic errors is difficult and merely repeating a lesson or extra practice will not help. Telling students where they are committing errors will not work either. Recognizing student errors and immediately focusing a discussion on the error is important. Providing guiding questions using inductive reasoning is the best approach. The most effective method of eliminating mathematics errors is to address them immediately when observed. This is imperative, so students do not carry these errors any further and develop a better understanding of the subject (Wetzel, 2008). Two of the seven findings of the research carried out by Rakes (2011), reveal that a classroom environment that fosters enjoyment of mathematics and value the subject are associated with lowered conceptual errors and higher mathematics self confidence and motivation to learn the

subject on the part of the students is also associated with their reduced conceptual errors. Students must be able to build up a habit of checking their calculations, checking for the use of correct procedures, and reporting to the teacher after each sum is completed in order to minimize their errors (Walker, 2008; Schonell, 1951).

### ***Conclusion***

The study has certain implications for the secondary school mathematics teachers. While teaching in their classes, teachers should always keep in mind the type of errors committed by their students and accordingly plan their lesson. It has been found that conceptual error is the most prevalent among the students. Hence, individual care should be taken in this regard. Appropriate remediation instructional strategies should be applied for eliminating the different kinds of mathematical errors made by the secondary school students. Teachers need to address specific deficits, particularly in the underlying principles and concepts of mathematics. It may be that boys and girls require additional instruction or elaboration in different areas (Marshall & Smith, 1987).

Errors can be checked to some extent by the use of diagnostic tests. The teacher is required to know exactly what are the nature, extent, and causes of pupils' committing errors in a particular area of mathematics. It is only possible when the teacher can diagnose and suggest remedial measures for specific backwardness in the subject. Therefore, the problem of committing errors in mathematics among the students necessitates continuous efforts to improve teaching methodology, mathematical understanding and functional thinking in mathematics (Kaur, 2011). By viewing student errors as indications of partial understanding or correct answers to slightly different questions, teachers can use student thinking as a resource to help students to deepen and refine their thinking. Incorrect responses can be a wonderful starting place for discussion and analysis of important and challenging mathematical ideas (McNamara & Shaughnessy, 2011). Schonell (1951) offered some suggestions for minimising errors which are valid still today.

- (i) Intelligent reading of the problem;
- (ii) Technique of attack, analysis, and arrangement of data;
- (iii) Seeing relationships between the data;
- (iv) Seeing an analogy with similar problems;
- (v) Selecting and reproducing the process;
- (vi) Accurate computation; and
- (vii) Approximate checking of the result.

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## Geography of Personality : An Empirical Study of Two Different Geographical Locations

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### Abstract

*The present paper is the brief report of a research conducted with a view to get empirical evidence for a probable geography of personality in West Bengal. Origin of the related concepts of Behavioural Ecology, Modal Personality and Geography of Personality were outlined and then two completely opposing locations, Sundarban and Bankura were selected. The contrasting geographical and climatic features of the two locations were compared and two groups of students were selected as samples from the selected regions. The samples were stratified in terms of Courses of study (Arts vs. Science), Gender (Male vs. Female) and Level of study (HS vs. Degree). Trait-State Anxiety Scale (Pal & Tewari) and Kundu Neurotic Personality Inventory were administered to the samples (Bankura – N=275 and Sundarban – N=300) to test whether Trait Anxiety and Neuroticism as two personality traits show any difference due to the habitat. Results of ANOVA indicate that there is no significant difference in anxiety level of the two groups but students of Sundarban have higher neuroticism than those from Bankura. It was concluded that further studies with larger sample are required and wider normative survey was recommended.*

**Key Words :** *Geography of Personality, Trait Anxiety, Neuroticism*

### Introduction

#### *Behavioural Ecology*

Personality studies occupy a major space in the firmament of psychological research as it continues to expand over many other disciplines which were considered alien to human behaviour until the very recent times. As for example, Nettle and Panke (2010) wrote an article in the Philosophical Transactions of Royal Society (Biological Sciences) linking literatures from human Psychology and Behavioural Ecology. Behavioural Ecology is a specialised branch of Biology which originated since Hamilton (1964) published his studies in genetic

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evolution of social behaviour of animals. It replaced the age old concept of Comparative Psychology studying evolution of animal society, their social behaviour and its evolutionary significance for human social behaviour. After Hamilton, numerous published research evidences showed convincingly, how animal behaviours were closely related to ecology from the biological perspective.

Houston and McNamara (2006) for the first time emphasized the important role played by John Manard Smith who pointed out the consistency of human behaviour as related to the specific ecological peculiarities. It was further emphasized by Andre'z Lopez-Sepulcre (2011) in more specific terms that there are many ecologies of human behaviour. This conviction is pertinent for the questio, is there regional concentration of human behaviour that can be identified distinctly?

#### *Modal Personality*

On the other hand anthropologist Cora DuBois coined the term Modal Personality in 1944, based on her research carried out in the Alor island of Indonesia (Fogelson 2012). According to her view, modal personality refers to the behaviour or personality traits possessed by majority of people belonging to a culture. Since then, Cultural Anthropology incorporated within it the inter-relationship of culture and personality and Social Psychology followed the suit. At present, it is an undisputed fact that culture is an important determinant of personality agreed upon by the social psychologists, cultural anthropologists and the sociologists although; their perspectives and approaches of studies are different to some extent.

Studies in modal personality are usually carried out with primary focus on either a culture and the corresponding population belonging to it or a specific personality trait, e.g., Neuroticism. Recently, The Journal of Cross-cultural Psychology is almost flooded with many studies primarily concerning the relationship of culture with personality or the modal personality of different cultures. As for example, Ispas, Illiesen, & Alexandra (2014) explored the cross-cultural generalizability of the Five Factor Model of personality on Romanian culture and concluded that FFM is valid for Romanian population also. On the other hand Ispas and others (2013) came to the conclusion, on the basis of his studies with Japanese, Japanese-Americans and European-Americans that acculturation of personality is the reason behind cultural differences of personality pattern. The process of acculturation of personality was best explained much earlier by Maccoby (2000). He pointed out that, ecology, among other factors, shapes the culture which in turn shapes the socialization pattern which again determines some of the

variance of personality. Thus behavioural ecology is logically valid and empirically identifiable.

### *Geography of Personality*

The question of regional uniqueness of personality which arises in connection with the results obtained by the researchers in behavioural ecology and modal personality of different cultures was first addressed significantly by Jason Rentfrow (2009) in the University of Cambridge. According to him, as in the case of social influence, features of physical environment could affect personalities of individuals within given region. Climate, for instance, has a significant effect on the types of activities in which the people within a region can engage. Gosling (2010) provided concrete evidences showing that Mid-Atlantic and New England states of USA are relatively stressed, irritable and depressed, whereas West- coastal residents are more emotionally stable, relaxed and calm. Traits associated with intellect such as Creativity, Imagination and Openness are higher in North-East and West coast than in Central and Southern states. The above mentioned conclusions are the outcome of survey conducted over 1.5 million people for 12 years in 48 contiguous states and Columbia district. He found that over these areas the Big Five Factors are unevenly distributed. Rentfrow, Kosinski, Stillwell, Gosling, Markus & Potter (2013) ultimately identified three psychological regions of the United States and explored further their political, economic, social and health correlates of personality differences.

Recently, a number of research studies investigating the regional distribution of personality traits. Allik and McCrae (2014) compared the personality trait patterns of people across three cultures, namely, European and American vs. Asian and African cultures. They noted significant regional biases of personality traits in terms of the Big Five Factors, particularly in Neuroticism factor. To the contrary, Zecca and his colleagues (2013) could not identify any pan-African personality pattern on the FFM. They concluded that the mean personality profiles may be difficult to compare and thus this study showed no pan-African structure of personality. Bagley (2013), on the other hand, advocated strongly in favour of geography of personality. Many more studies can be cited as they pour into various research journals but till now the results are not conclusive because there are some methodological issues that need to be resolved. As for example, most of the studies are in the nature of survey and therefore, personality tests are administered on general population without any control in sampling. Also the modal personality profiles for specific geographical regions are not available. Only

monovariate comparison of personality traits are reported. However, descriptive qualitative accounts are reported in some cases.

With this backdrop the present study was conducted with controlled student population from two extreme geographical locations of the two districts of West Bengal, namely, Bankura (Sadar) and South 24 Parganas (Sundarban). The brief comparative features of the two locations are given below in Table-1.

**Table 1 : Basic geographical, climatic and other differences between Bankura and Sundarban**

Sl. No.		Sundarban	Bankura
1.	Soil	Wet, frequently invaded by saline water, Excess of sand, lack of plant nutrients	Dry, mostly laterite soil
2.	Vegetation	Mangrove forest occupies the major parts (World heritage site)	Scanty tropical forest
3.	Population	Densely populated by Hindus and Muslims	Not so densely populated by Hindus, Christian and tribals
4.	Occupation	One crop cultivation, daily labour & collection of forest products	Difficult cultivation, agricultura, non-agricultural occupations & Mining
5.	Climate	Humid, cyclone and flood prone, turbulent water in summer	Drought prone, dry and extreme type
6.	Communi- cation	Difficult due to the network of rivers & canals, boats are widely used	Relatively better connected by roads and railway
7.	Temperature	Summer 29°C, Winter 20°C Average 25°C	March to June 45°C, Winter 4-5°C
8.	Educational Facilities	No. of H.S schools : 38 No. of degree colleges : 03	No. of H.S schools : 12 No. of degree colleges : 03

Apparently, it is noticed that the people in these two regions differ in behaviour pattern, life style and in a number of other ways. From the administrative point of view Sundarban is designated as rural and Bankura as urban regions, although the later is not totally devoid of rural features and also the former is not totally free from urban nature due to the proximity to the town Diamond Harbour and to some extent the filtered impact of Kolkata metropolis. Therefore, the primary aim was to compare the students of these two mostly opposing geographical areas in respect to two personality traits, namely, Neuroticism and Trait Anxiety. It was assumed that due to the difficult living and risks prevailing in Sundarban, the people may experience greater anxiety level of neuroticism.

### *Neuroticism*

Neuroticism is the 4th factor in Big Five Factor Model. It refers to the emotional stability of the individuals ranging between calm, composed, not hypochondriac on the one extreme and anxious, excitable and hypochondriac on the other. Neuroticism has been a common trait accepted by almost all theories of personality with various connotations and it is measurable by independent personality questionnaires and tests.

### *Trait Anxiety*

It is not exactly an anxiety disorder as classified under DSM IV (R) but a generalised subjective state. Persons having trait anxiety live in a constant state of tension, worry and diffuse uneasiness. It is a correlate of neuroticism or in other words, if neuroticism is considered as the predisposing trait, the generalised anxiety is one of its behavioural manifestations. Generalised anxiety is often manifested in the form of somatisation of symptoms as result the tests assessing trait anxiety may seek to explore the related information along with those on general state of worries and tensions. However, for the present investigation, the most pertinent and the only research question is whether the physical climate and geographical features have any impact upon neuroticism and trait anxiety.

### *Objectives*

Objectives of the study obviously are (i) to assess and compare neuroticism and trait anxiety in Bankura and Sundarban and (ii) to explore the impact of gender and course of study on neuroticism and anxiety.

### *Methods*

#### *Sample*

Sample comprised students at two levels, Higher Secondary and Degree

courses both male and female and belonging to Science and Arts groups. The description of the sample is given in numerical terms below in the Table 2.

**Table 2: The size and stratification of the sample from Bankura and Sundarban**

Courses	Level	Gender	Bankura	Sundarban	Area Total
Arts	Higher	Male	25	50	75
	Secondary	Female	25	50	75
		Degree	Male	25	50
	Degree	Female	25	50	75
		Total		100	200
Science	Higher	Male	25	50	75
	Secondary	Female	25	50	75
		Degree	Male	25	50
	Degree	Female	25	25	50
		Total		100	175
Grand Total			200	375	575

It is obvious that there were fewer students from Bankura who participated in the study. The reason behind this inequality lies in the fact that the geographical region under Bankura was restricted to the urban municipal area only leading to the availability of fewer schools. Enrolment of female students in the science degree courses in Sundarban was relatively low and therefore only 25 girls could be included in the sample.

### ***Tools for Data Collection***

Data were collected over a period of one year during the full academic sessions. **Kundu Neurotic Personality Inventory**, a widely used and meticulously standardised questionnaire was applied to assess Neuroticism and the **Trait-State Anxiety Scale** (Pal and Tewari) was used for measuring Trait Anxiety. KNPI is a 66 item test with five response alternatives for each item. Its reliability ranges from .82 to .91 and is validated against criterion clinical groups. The authors of the Trait-State Anxiety scale (30 items) claim their test to be reliable and valid. The reason behind selecting these two variables lies in the studies

of Gosling (2010) who identified geographical distribution of Neuroticism related traits in the USA.

### ***Design and Hypotheses***

From the objectives mentioned earlier and the stratified nature of the sample, it is needless to explain that examining intergroup differences form the core of this investigation. Formally, it may be termed as a fit case for factorial design and accordingly, the following null-hypotheses were tested for drawing conclusions.

- H<sub>0</sub>1 : There is no significant difference between the students of Bankura and Sundarban in Neuroticism.
- H<sub>0</sub>2 : There is no significant difference between the students of Bankura and Sundarban in Trait Anxiety.
- H<sub>0</sub>3 : There is no significant difference between male and female students in Neuroticism and Trait Anxiety.
- H<sub>0</sub>4 : There is no significant difference between Science and Arts students in Neuroticism and Trait Anxiety.
- H<sub>0</sub>5 : There is no significant difference between the students of HS and Degree levels in Neuroticism and Trait Anxiety.
- H<sub>0</sub>6 : There is no interaction effect of area, gender, course of study level of education on Neuroticism and Trait Anxiety.

### ***Analysis of Data***

After computing means and standard deviations of the scores in Trait Anxiety and Neuroticism for all the sample subgroups data were subjected to 4-way ANOVA with 2 areas (Bankura vs. Sundarban), 2 levels of education (HS vs. Degree), 2 courses of study (Arts vs. Science) and 2 gender categories (Male vs. Female).

### ***Results and Discussion***

Table 3 shows the subgroup Means and Standard Deviations. For the sake of brevity, means and standard deviations for the whole group of sample was eliminated.

**Table 3 : Subgroup Means and Standard Deviations for Sundarban and Bankura areas.**

Areas			Trait Anxiety				Neuroticism			
	Courses		Arts		Science		Arts		Science	
	Level		HS	Degree	HS	Degree	HS	Degree		
Sundarban	Female	Mean	57.54	58.72	56.58	56.72	209.20	201.58	193.16	192.72
		S.D.	5.37	6.17	8.49	5.81	50.38	24.32	35.94	31.91
	Male	Mean	57.66	55.20	54.78	56.52	203.20	190.24	182.14	184.1
		S.D.	6.29	5.73	5.56	6.02	33.31	25.97	34.76	25.13
	Total	Mean	57.60	56.96	55.68	56.59	206.20	195.91	187.65	186.97
		S.D.	5.82	6.18	7.20	5.91	42.60	25.58	35.61	27.66
Bankura	Female	Mean	57.40	59.04	55.88	57.04	187.44	191.88	162.12	183.04
		S.D.	5.64	5.55	5.18	5.65	19.22	31.07	32.29	30.64
	Male	Mean	54.16	56.64	54.58	53.68	186.80	179.08	178.4.	173.80
		S.D.	7.12	5.98	7.20	5.39	26.05	33.34	35.97	30.91
	Total	Mean	55.78	57.84	55.38	55.68	187.12	185.48	170.26	173.80
		S.D.	6.55	5.84	7.20	5.39	22.66	32.48	34.82	30.81

Apparently, the mean scores in Trait Anxiety show hardly any intergroup differences but certain groups in the Bankura have scored relatively lower mean in Neuroticism with the female HS group the least mean. The results of ANOVA are presented in Tables 4 and 5.

**Table 4 : Analysis of Variance of the Trait Anxiety Scores (N=575)**

Source	Sum of squares	df	Mean Square	F	p	Significance
Area	50	1	50	1.3074	.253	NS
Course	211.357	1	211.357	5.5267	.019	S
Level	43.801	1	43.801	1.1454	.285	NS
Gender	474.320	1	474.32	12.4028	.000	S
C × G	14.365	1	14.365	.3756	.54	NS
C × L	2.000	1	2.000	.0523	.819	NS
C × A	3.075	1	3.075	.0804	.777	NS
G × L	25.347	1	25.347	.6628	.416	NS
G × A	42.320	1	42.320	1.1066	.293	NS
L × A	24.221	1	24.221	.6333	.426	NS
C × G × L	8.323	1	8.323	.2176	.641	NS
C × G × A	.029	1	.029	—	—	—
C × L × A	107.165	1	107.165	2.8022	.095	NS
G × L × A	.541	1	.541	—	—	—
C×G×L×A	142.467	1	142.467	3.7253	.054	NS
Error	21377.76	559	38.24286			

**Table 5 : Analysis of Variance of the Neuroticism scores (N=575)**

Source	Sum of square	df.	Mean square	F	p	Significance
Area	25891.777	1	25891.777	24.3366	.000	S
Course	19776.007	1	19776.007	18.7762	.000	S
Level	72.481	1	72.481	.0681	.794	NS
Gender	3763.649	1	3763.649	3.5376	.061	NS
C × G	661.025	1	661.025	.6213	.431	NS
C × L	3477.780	1	3477.780	3.2689	.071	NS
C × A	36.295	1	36.295	.0341	.854	NS

G × L	3299.969	1	3299.969	3.1018	.079	NS
G × A	1870.273	1	1870.273	1.7579	.185	NS
L × A	2060.820	1	2060.820	1.9370	.165	NS
C × G × L	63.169	1	63.169	.0594	.808	NS
C × G × A	1037.875	1	1037.875	.9755	.324	NS
C × L × A	12.5	1	12.5	.0117	.914	NS
G × L × A	2413.735	1	2413.735	2.2688	.133	NS
C×G×L×A	890.42	1	890.42	.8369	.361	NS
Error	594721.82	559	1063.903			

From the statistical point of view, none of the F values in Trait Anxiety is significant except those for course of study that is between Arts and Science, and gender. Therefore only the two hypotheses concerning gender and courses of study are rejected accepting all the others. Examination of the figures will reveal that Students in the Arts courses show a relatively higher anxiety ( $M=57.005$ ) than the Science groups ( $M=55.75$ ). About the effect of geographical location, it is obvious that Trait Anxiety does not have any regional concentration. Similarly, the female students display slightly higher anxiety ( $M=57.31$ ) in comparison to their male peers ( $M=55.68$ ) which is perhaps due to the higher achievement orientation of the girls or there may be due to several other reasons which cannot be explained on the basis of the results obtained in this study. However, none of the differences mentioned above is very high which requires further verification with much larger sample (Gosling 2010). But the result obtained here, cannot be claimed to be convincing. It is not only due to relatively smaller sample but also due to another reason. Apart from the area-wise difference, F due to the courses of study appears to be highly significant. Thus there is also a second source of variation which needs to be controlled for any meaningful convincing conclusion about the regional impact upon the personality factors like Neuroticism. Presently, at the best, it can be claimed that there is high probability of population variations in personality profiles which when properly investigated can provide even the administrators with valuable behavioural implications expected from a specific group of people. Another important issue could not be addressed in this study. In order to ascertain the modal personality Neuroticism, on the other hand, shows some degree of geographical impact. Results of ANOVA in the Table 5 reveals that F due to geographical area is highly significant indicating higher neuroticism in

the Sundarban area than Bankura (the corresponding Mean scores are 194.12 and 180.32 respectively). In fact some of the previous studies with the personality dimensions under FFM have focused on this very factor particularly of the two geographical locations in terms of normative survey may be undertaken because as per the norms suggested in the test manual, many of the students in Sundarban have scored in the range of Slightly Neurotic, whereas, such cases are fewer in Bankura region.

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## Impact of Globalization on Elementary Education in India

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### Abstract

*In elementary education the changes brought about by the globalization process have been manifested in modes of financing, administration and curriculum. Following the internationally declared objective of achieving "Education for all" in the Jomtien Conference (1990) more and more aid resources from abroad flowed to India and became directed at elementary education. There has been remarkable and significant quantitative expansion of elementary education during the globalization era, which got accelerated over years. But this phenomenal quantitative achievement has not translated itself into the improvement of quality education of children in terms of their learning achievement in subjects like language and Mathematics, in children's own cultural progress including co-curricular activities and in their decent behavioural pattern. A situation has developed, for instance, in West Bengal where children go to schools but learn and acquire little while school facilities are massively developed. This is mainly explained by the massive changes in school curriculum under the impact of globalization.*

**Key Words :** *Elementary Education, Globalization, School Curriculum*

### Introduction

Globalization is a process of integration of economies and societies through cross country flows of information, ideas, technologies, goods, services, capital, finance and people, the accent being on capital and finance. In education, the changes brought about by globalization have been manifested through various channels and mechanisms as reforms of structures, modes of financing, administration and curriculum (Kumari, 2014: 461-67). The elementary education<sup>1</sup> in India is influenced in the globalization process through both quantitative and qualitative changes and also in terms of both content and methods of teaching (Sau, 2014).

After nearly a hundred years since G.K. Gokhale proposed (in 1910) the need to make elementary education free and compulsory, its passage in August 2009 by the Parliament of India has been an achievement, a harbinger of better tidings and times for elementary education in India, which entitles all children

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6-14 years old to at least eight years of schooling. The Government of India has adopted a variety of initiatives including infrastructure development under the Sarva Siksha Mission (SSM) being financed both internally and externally in the era of globalisation. Since 1990 the government have accepted external aid for elementary education. Another method of finding additional resources for meeting Right to Education requirements is public-private partnership. There is now new-found emphasis in the last few years on public private partnerships (PPP) in the social sectors including elementary education. It has been advocated against the resource constraint of the Government. There have not been many examples of PPP in education, especially not in elementary education. The PPP suggested by the Department of Education draws its source from the World Bank and from organizations that seek to infuse the rationale of capital and corporate management into the context of a system that should be oriented to delivering education as an equal and quality public good. That these would be incompatible and even antithetical to each other has been witnessed in several contexts and the limitations of the charter schools in the US are only one manifestation of this. The Department of Education seems to rely on assumptions that the private sector itself and all private sectors have efficiency and accountability in-built within themselves. This assumption is asserted without any substantial evidence of the actual delivery records of private players vis-à-vis that of the public sector. For example, the stated results from varied countries do not provide us details of the actual finances allocated to the schools, variations in skills and training of teachers, role and inputs of parents, and the social and economic backgrounds of the children themselves. What is overlooked in the simplification of the poor delivery of the public system is its very erosion by and within the Department itself. Even as the system has grown in numbers and reach, its management structures and processes have remained outdated and corroded. The problems of efficiency and accountability are key problems that have resulted from the neglect of such processes in the government system and are not necessarily inevitable characteristics of all public systems. That we have examples of public education like the Central Schools that are cited for their excellence is often not invoked in these discussions that assume the inefficiency of all public education systems.

In suggesting and describing the various models and programmes under the PPP, the Department seems to overlook the fact that the nation already has the world's most varied school education system and this is the basis for a highly uneven and unequal education system. This consists of schools that range from the remote and bare Ashramshala schools to the exclusive, international schools. In between these are the range of government schools, central schools, private and aided schools, and schools run by religious organizations, which combine

with a variety of school boards and medium of instruction to make for a varied and hierarchical education system. The significance of such variations and their impact itself has not been factored in and the call for a variety of new PPPs on which schools can be managed would only add to this hierarchy and differentiation of schools. The PPP in elementary education seeks to dismiss with its assertion of the strength of private capital to deliver public goods.

Globalization increases the dependence of developing countries on foreign capital and finance. It is more than the free interplay of market forces since economic questions like increasing inequality as consequent on globalization cannot be divorced from social issues like spread and quality of education. International commitments to achieve education for all (EFA) globally meant that India was an important case for donors. India was pressed to accept aid for primary education, and agreed with some reluctance. Subsequent donor involvement was substantial and influenced aspects of both policy implementation and management (Colclough C. and A. De, 2010). Education has come to be dominated by neo-liberal ideas (Maharatna, 2014). Access to credits is granted to developing countries for development under strict conditionalities. There is also anxiety that the sovereignty of states is at stake as globalization appears to question their rights to independent decision-making (Conwuka and Eguavoen 2007).

Against this brief backdrop the present paper discusses the impact of globalization on elementary education in India. In so doing it first discusses the issue of external aid that constitutes the major channel of globalization to have its impact on elementary education in the country. Second, it analyses its impacts on access, equity and retention of children. Lastly, it studies the impacts of globalization on learning achievement of children in India with special reference to West Bengal and also the related changes in the management structure of elementary education.

### ***Foreign Aid for Elementary Education***

Foreign aid has been considered a possible additional source of education finance (besides the government finance) in many developing countries. Before 1990, aid to elementary education of India had been small. The school system had been mainly domestically financed, and aid was focused on post-secondary, technical and vocational education. As pointed out by Tilak (2008) foreign aid was felt necessary only in the case of foreign-exchange-intensive, capital-intensive sectors and for those sectors in need of foreign expertise. Education in India in general and school education in particular did not fall in any of these categories. But the role of foreign aid in the education (including elementary) sector changed since then.

Consequent on adoption and implementation of economic reforms (including globalization) more aid resources from abroad flowed to India from the 1990s onwards, and became increasingly directed at elementary education. The shift possibly came about because of the global awareness regarding the adverse impacts of structural adjustment policies on social sectors like education and the launching of a compensatory social safety net programme funded by loans from the World Bank/IMF. Following the internationally declared objective of achieving “Education for All” in the Jomtien Conference (1990) the international aid agencies were keen to increase their aid commitments to primary education (Mehrotra et al, 2005).

The resulting picture of aid to elementary education from the Seventh to the Tenth Five Year Plan periods is summarized in Table 1. The table shows the rapid increase in levels of aid to elementary education (both approved and allocated) during this period. In current prices there was more than a 40-fold increase in aid approved for elementary education purposes over the two decades.

**Table 1 : Allocation and Utilisation of Foreign Aid for Elementary Education from Seventh Five Year Plan to Tenth Five Year Plan**

(Rs. millions)

Plan	Period	Total aid approved	Total aid allocated	Aid utilized
7th Plan	1987-1992	6580	n.a	81
8th Plan	1992-97	40060	6320	6130
9th Plan	1997-2000	147540	87240	40930
10th Plan	2002-2007	287500	49040	38270

*Source: Annual Financial Statistics, GOI, relevant years*

<http://education.nic.in/planbudget/planexpen.pdf> (p12) for tenth plan

*Notes :* Utilization data for 2006-7 are not available. Data on allocation have been used for that year.

Na : indicates not available.

During the Tenth Plan period of India, i.e, 2002 to 2007, total aid approved (Rs 287500 million) was higher than that during the Seventh to Ninth Plan period, i.e, 1987 to 2000 (Rs 194180 million). During 1993-94 to 2000-01 total external aid at current prices was Rs 33548.4 million, which increased to Rs 99112.3 during 2001-2 to 2008-09. The corresponding figures at constant prices (1999=100) were Rs 36184.3 million and Rs 78253.4 million.

Although in 2002-3 when external aid was towards its peak, aid accounted for

only 1.5% of total education expenditure and 3% of expenditure on elementary education, as a proportion of development expenditure its role was much more substantial. It increased from 5 per cent of central government plan expenditure on education in 1993-94 to 20% in 2000-01 (Tilak 2008). The proportion was even higher for elementary education, rising from 10% to 35% over those years. Thus, aid donors financed a significant part of the development costs of elementary education expenditures in India over several years (Colclough and De, 2010). In principle, therefore, their influence over some aspects of the programme may have been substantial.

Since 2003, the World Bank has been working with Central and State governments, along with development partners (UK's DFID and the European Union) to support the Sarva Shiksha Abhiyan program. In Phase 1 (2003-2007) the Bank invested \$ 500 million to expand facilities and improve infrastructure, get children to school, and set up a system to assess learning. In Phase 2 (2007-2012) the Bank was to provide a total of \$ 1.35 billion to expand access to upper primary education, increase retention of all students until completion of elementary education (Grade 8), and improve learning levels. In addition, the Bank evaluations and research provide pointers to further improvements. This includes studies on financing elementary education, teacher absenteeism, instructional time and quality in primary education and the impact of information sharing with village education committees, inclusive education for children with disabilities, comparisons between public and private schooling in Uttar Pradesh, Andhra Pradesh, and Madhya Pradesh, and incentives to improve quality. During 2010-13 external assistance for SSA came only from European Community & DFID. From 2013 onwards External Assistance for SSA was only from European Community.

### ***Impact of Globalization on Access, Equity and Retention of Children***

Some of the States' and a large share of the Centre's expenditure (a substantial part of which is financed through foreign aid) go for creating school infrastructure, employing new teachers, improving access, providing teaching and learning materials, etc. So an outcome of this expenditure would be physical indicators like improved access (more schools, more rooms and more teachers) and improved facilities at schools.

As per *Selected Educational Statistics 2005-06 Time Series* of the MHRD and the District Information System for Education (DISE), total number of primary schools increased from 4,94,503 in 1980-81 to 6,38,738 in 2000-01, which further rose to 8,53,870 in 2012-13. The corresponding figures for upper primary schools were 1,18,555, 2,06,269 and 5,77,832. The number of primary school teachers recorded increase from 1363 thousand in 1980-81 to 1896

thousand in 2000-01 and further to 2184 thousand in 2005-06. The respective figures for upper primary schools were 851 thousand, 1326 thousand and 1671 thousand. Over 12 lakh teachers' posts were sanctioned and 10.22 lakh recruitments reported during the Eleventh Plan period. This improved the Pupil-Teacher Ratio (PTR) in primary schools from 43:1 in 1990-91 to 38 in 2005-06, 36:1 in 2006-07, 34:1 in 2008-09 and further to 28:1 in 2012-13 while at upper primary level it improved from 37:1 in 1990-91 to 32:1 2006-07, 31:1 in 2008-09 and further to 29:1 in 2012-13. Provision has been made for at least two teachers per primary school and for subject teachers for mathematics and science in upper primary schools.

During 2000-2001, the percentage of female teachers to total teachers was 35.60% in primary schools and 38.15% in Upper Primary Schools, which further increased to 65 per cent and 67 per cent respectively in 2005-06.

Average number of classrooms at the elementary schools increased from 2.7 in 2005-06 to 3.5 in 2012-13. Student classroom ratio registered decline from 39 in 2006-07 to 31 in 2010-11 and further to 27 in 2012-13.

There has been the encouraging trend of the growing outreach of the schools to the girls. The participation of girls at the two stages of elementary education has been increasing steadily through the years. The percentage of girls in the total enrolment at primary and upper primary level was 28.1 and 16.1 respectively in the year 1950-51, which increased to 48.4 and 48.8 at primary and upper primary levels respectively in 2012-13. However, the girls' participation is still below fifty per cent at these stages of elementary education.

Number of girls' enrolment per hundred boys enrolled in Primary and Upper Primary schools during 1950-51 to 2005-06 shows remarkable progress in respect of girls' participation in elementary education. It recorded significant increase from 39 in primary and 18 in upper primary schools in 1950-51 to 63 in 1980-81, and further to 87 in 2005-06. The respective figures for upper primary schools are 18, 49, and 81. Increase in the enrolment of girls may not have been possible without improvement in the enrolment of girls belonging to different social categories, particularly SC, ST and Muslim. The DISE data for the year 2009-10 to 2012-13 suggest that the percentage enrolment of SC, ST and Muslim children corresponds with their percentage share in population.

As per administrative statistics of the Ministry of Human Resource Development of the Government of India, the Gross Enrolment Ratio<sup>2</sup> (GER) for Grade I-V in India in 1990-91 was 100.1 per cent, which increased to 109.4 per cent in 2005-06. For the class group VI-VII this ratio increased from 62.1 to

71.0 during this period while at the elementary (I–VIII) level it increased from 86.0 to 94.9 per cent. The gender gap in gross enrolment ratio at the elementary level impressively declined from 29.2 to 7.5 percentage points during this period.

The GER increased at the primary level from 110.9 in 2006-07 to 118.6 per cent in 2010-11 and that at the upper primary level from 64.7 to 81.1 per cent during this period. The GERs with respect to Scheduled Castes (SCs) and Scheduled Tribes (STs) at the primary and upper primary levels increased at a faster rate than that for all categories put together for the corresponding period suggesting a welcome narrowing of the gap. Net enrolment ratio in India improved from 44.8 per cent to 60.9 per cent during 2005-06 to 2009-10 while the coefficient of variation posted decline from 15.9 per cent to 12.0 per cent. GER at upper primary level is relatively low, but it had shown considerable improvement. GER at upper primary level is relatively low, but it had shown considerable improvement.

Gender parity index<sup>3</sup> (GPI) has also shown significant improvement, particularly at the upper primary level. The primary level GPI improved marginally from 0.92 in 2005-06 to 0.94 in 2009-10. However, GPI at upper primary level increased from 0.84 in 2005-06 to 0.93 in 2009-10, mainly due to the gender gap having already been reduced considerably during this period. GPI across the states also registered decline during this period.

DISE calculates the retention rate, which includes the percentage of Class 1 students who continue schooling till the end of primary or elementary cycle. DISE data for retention rate at primary level is available for all States; this indicates that the primary level retention rate increased from 70.26 in 2006-07 to 74.01 in 2009-10. Transition and completion rates at the elementary school level in India during 2006-07 to 2012-13 also indicates significant improvement during 2006-07 to 2012-13.

At the primary stage the rate of drop out decreased from 42.6% in 1990-91 to 40.7% in 2000-2001 and further to 25.55 per cent in 2007-08. Similarly, at the elementary level as a whole the rate of dropout which was 60.9% in 1990-91 came down to 53.7% in 2000-2001 and further to 43.03 per cent in 2007-08, implying an improvement in retention rates.

NSS (200708) tabulates the major reasons for discontinuing studies among ever enrolled persons of age 5-29 years as: Financial constraints 21%, Child not interested in studies 20%, Unable to cope up or failure in studies 10%, Completed desired level or class 10%, Parents not interested in studies 9%.

Notwithstanding the improvement in enrolment ratios, there is still a large number of out of school children. *Census* 2001 estimated that 3.2 crore children in the 6-14 age are out of school. This represented 28.2% of the population in the 6-14 age groups. An independent national sample survey conducted in 2005 estimated the number of out of school children at 1.3 crore. A second independent national sample survey conducted in 2009 acknowledged the steady decline in the number of out of school children, and reported 81 lakh children out of school.

Decline in the percentage of out of school children has taken place across gender and all social categories. The percentage of out of school children aged 6-14 years decreased from 6.94 percent in 2005 to 4.28 percent in the year 2009. This decrease was sharper in rural areas, where it dropped from 7.08 percent to 4.53 percent compared to urban areas where it moved from 4.34 percent to 3.18 percent only.

The number of out of school children who are physically or mentally challenged is a cause for concern. Of the total physically or mentally challenged children, 34.12% (988,359) were found to be out-of-school in the IMRB 2009 survey. The gender gap has also not reduced and continues to be widest amongst all socially disadvantaged groups. A wide gap in participation rates of rural girls and urban boys from all ages persists. Tribe's girls in rural areas are in the most disadvantages position as only 51% of them are enrolled in schools whereas 80% of all the girls in urban areas are enrolled. The development has not been uniform across the states and districts in the country. Disparity in PTR across the states declined over years, standard deviation declining at the primary level from 11.46 to 9.56 and at the upper primary level from 12.39 to 11.34 during the period from 2006-07 to 2008-09.

Impact of globalization on educational development outcomes has been assessed through indicators comprising (i) Gross Enrolment Ratio—Overall, (ii) Scheduled Castes : Gross Enrolment Ratio (iii) Scheduled Tribes : Gross Enrolment Ratio (iv) Gender Parity Index in Enrolment, (v) Repetition Rate, (vi) Drop-out Rate, (vii) Ratio of Exit Class over Class I Enrolment (only at Primary stage), (viii) Percentage of Passed Children to Total Enrolment, and (ix) Percentage of Appeared Children passing with 60 per cent and more marks. But it is observed that in the multiple regression frameworks the access index (X1), infrastructure index (X2) and teacher index (X3) are not significant to explain the variation in output index (Y) as prepared by the NEUPA across the states of India during 2006-07 to 2008-09 as shown in Table 2 on next page.

**Table 2 : Regression Equations on outcome index for Primary and Upper Primary Schools, 2006-07 to 2008-09**

Primary Schools: 2006-07

$$Y = 0.359 + 0.018X_1 + 0.106X_2 + 0.153 X_3 \quad R\text{-bar sq.} = 0.13, F = 2.65$$

(3.62) (0.12) (0.83) (1.30)

Upper Primary Schools: 2006-07

$$Y = 0.04 + 0.40 X_1 + 0.12X_2 + 0.20 X_3 \quad R\text{-bar sq.} = 0.17, F = 2.38$$

(0.73) (1.08) (0.01) (0.97)

Primary Schools : 2007-08

$$Y = 0.504 + 0.008X_2 + 0.290 X_3 \quad R\text{-bar sq.} = 0.206, F = 3.59$$

(6.40) (0.96) (1.62) (significant at 5 per cent level)

Upper Primary Schools : 2007-08

$$Y = 0.34 + 0.17 X_1 - 0.06X_2 + 0.29 X_3 \quad R\text{-bar sq.} = 0.083, F = 1.60$$

(2.33) (0.66) (-0.26) (1.48)

Primary Schools: 2008-09

$$Y = 0.524 + 0.260X_1 + 0.095 X_2 + 0.104 X_3 \quad R\text{-bar sq.} = 0.018, F = 1.21$$

(4.89) (1.77) (0.642) (.73)

Upper Primary Schools: 2008-09

$$Y = 0.26 + 0.38 X_1 - 0.05X_2 + 0.23 X_3 \quad R\text{-bar sq.} = 0.158, F = 2.25$$

(1.58) (0.11) (-0.22) (1.40)

The insignificant influence of access index (X1), infrastructure index (X2) and teacher's index (X3) on the outcome index in the presence of foreign aid under the globalisation process leads us to look into the quality (learning achievement of children) dimensions of elementary education in India.

### ***Impact of Globalization on Learning Achievement of Children***

The real objective of education expenditure is to improve learning achievement of the pupils. In that sense the outcome that is most important is how much the students have improved their learning as a result of increased amounts being spent in the elementary education sector in the era of globalization.

A study conducted by the Teamlease Services based on India Labour Report 2007 has revealed a very disappointing scenario of quality of primary education in India. The study was conducted in all the states (excluding Mizoram and Sikkim) to measure the learning achievement (quality) of students in language and mathematics. This study found that in India after completion of primary level education, 11 per cent of students were not able to recognize anything,

14.1 per cent can recognize only letters, 14.9 per cent can read only a word, 17 per cent can read only a paragraph of a story and only 42.8 per cent can read the complete story. The condition of students' learning achievement in mathematic is poor compared to language. 18.6 per cent children could not recognize the numbers, 26.7 per cent children can recognize the numbers but not able to do addition or subtraction, 23.9 per cent only can do subtraction, and only 30.7 per cent children can do addition, subtraction as well as division.

The Programme Evaluation Organization (PEO) of the Planning Commission, Government of India undertook the evaluation study on SSA at the instance of the Development Evaluation Advisory Committee and Ministry of Human Resource Development. The survey was undertaken in eleven states (Andhra Pradesh, Assam, Bihar, Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal) and two union territories (Chandigarh and Puducherry) beginning February 2008. The reference period for the study was 2003 to 2007. According to the PEO study (2010), the quality of learning varied considerably between states. Achievement tests in English, Local language and Mathematics for Class II (primary) and Class VI (upper primary) students revealed that the performance of students in reading and verbal skills were better than in writing skills. The mean scores (marks) of students of primary classes (class II) in writing tests in urban schools was higher than that in rural schools. In comparison to mean marks (in percentage) of 54, 30 and 54 in writing tests of Arithmetic, English and local language respectively of rural students, urban mean scores (in percentage) were 69, 35 and 74. In upper primary classes too (class VI), the mean scores of urban students in writing tests were marginally better than their rural counterparts. Amongst subjects, students fared better in the local language than in Arithmetic or English.

Muralidharan (2013) observed that unlike measures of school quality based on inputs (which have shown an upward trend) the picture of learning achievement of children was bleak. Report of the ASER-2010 shows that whereas in 2007, 65.1% of class IV standard students of West Bengal could read the textbooks of class II standard, the same came down to 45.9 per cent in 2009, which means that the reduction in the three years was to the tune of 19.2 percentile point. Not only West Bengal, the four other states, namely Gujarat, Kerala, Haryana and Bihar too showed the same trend towards diminution. On the other hand, there was improvement in this respect in Andhra Pradesh, Maharashtra and Madhya Pradesh. The same report of the ASER also shows that the percentage of class-IV students able to solve the sums of class-II came down

in many states including West Bengal. The recent ASER report (Pratham 2012) finds that less than 50% of children who were enrolled in the fifth standard are able to read a simple paragraph at the second-standard level, and that less than 27% of children enrolled in the third standard were able to solve a two digit subtraction problem with borrowing and less than 55% of children enrolled in the fifth standard were able to solve the same problem.

According to the ninth Annual Status of Education Report (ASER 2013) the proportion of all children in Class 5 who can read a Class 2 level text decreased each year from 2009 to 2012, dropping from 52.8% in 2009 to 46.9% in 2012, and remains virtually the same in 2013 at 47%. There is another disturbing trend; that of the widening gap between government and private schools. In government schools, among Class five children enrolled, the percentage of children able to read Class two level text decreased from 50.3% (2009) to 43.8% (2011) to 41.1% (2013). In 2010, 33.2% children of Class 3 in government schools could at least do subtraction, as compared to 47.8% in private schools. In 2013, 18.9% of Class 3 students in government schools were able to do basic subtraction or more, as compared to 44.6% of Class 3 children in private schools.

Over the years, the ASER data suggest that not only are the levels of learning low, but that the trends in learning levels are in fact negative. Since basic reading and arithmetic are foundational skills, the low levels of learning suggested by the ASER data are especially alarming since they suggest that the Indian education system is doing well at enrolling children in school, but failing when it comes to teaching them even basic skills (Pratham 2012).

However, according to the findings of the national achievement survey (NAS) 2014 by the National Council of Educational Research and Training (NCERT), overall, Class 3 children in 34 states/UTs were able to answer 64% of language items correctly and 66% of mathematics questions correctly and this National Achievement Survey for class 3 reveals learning outcome trends to be encouraging. In NCERT's surveys, in language, students are tested on their ability to read and understand text and to listen to and recognize words. In mathematics, students are required to perform basic functions. The survey was based on information gathered from a sample of more than 104,000 students in 7,046 schools across 34 states and union territories. In most states, there was no significant difference in the quality of learning between boys and girls. Madhya Pradesh was the only Indian state where girls lagged boys in the learning outcome in language. In Kerala, girls outperformed boys in both language and mathematics. The rural-urban divide also seems to have been bridged with most of the Indian states showing no significant disparity between

rural and urban students. The NAS survey also revealed significant disparities across states. States like Bihar, Chattisgarh, Rajasthan, Haryana and Uttarakhand lagged the national average score in both language and mathematics. Puducherry, Tamil Nadu, Kerala and Karnataka were some of the states that outperformed the national average.

The ASER testing tools are meant to enable a rapid assessment of learning levels and do not span the full range of question difficulty representing the syllabus. It is useful therefore to also look at results from the nationwide School Learning Study conducted in 2010 (Educational Initiatives 2010) by Educational Initiatives, who are one of India's leading testing and assessment firms. These assessments included a broad range of questions including publicly released items from the international TIMSS tests, which would enable a global comparison. The main findings here are consistent with those from the ASER reports. Learning levels are low, and in particular scores on questions that require application of concepts are consistently lower than those on questions representing rote learning. The report also finds that the mean score across Indian public schools on the common TIMSS questions in the standard 4 language test is less than half that of the international mean (less than 30% compared to over 60%).

Thus, Muralidharan (2013) observes, quality of elementary education as defined by children's learning outcomes is low both in absolute terms (measured by what competencies children in school are demonstrating) as well as in relative terms (as seen in the PISA scores).

Garg and Mandal (2014) observe that in educational attainments children from SC and ST groups who are helped by the Mid-Day Meal lag behind those from other categories. Children belonging to SC group were worst with their scores in English and Mathematics being below the lowest passing limit. Performance in English was similar across all the caste groups with the average score being below 33%. The difference in scores across the caste groups was significant at 1 per cent level. Although the data set was small, yet this indicates the role of caste affiliations in determining educational outcomes. A similar finding has been reported by the National Council for Educational Research and Training (NCERT) in its National Achievement Survey, 2012. The report (NCERT 2012) says, "...students from the General category outperformed their peers in the SC, ST and OBC categories by a statistically significant margin". The other factors that explain the low learning achievement of children include political nature of appointment of school teachers, ritual inspection system for primary education and curriculum of primary education hardly matching the surroundings of the students in which they live.

The most important components of education spending in the past decade have been on improving school facilities and infrastructure, improving teacher salaries and training, hiring more teachers to reduce pupil-teacher ratios, and expenditure on student benefits such as textbooks, and mid-day meals. The PAISA Report (Accountability Initiative 2012) shows that these three categories of expenditure account for 90% of the SSA budget (in the most recent year, 44% was spent on teachers, 36% on schools, and 10% on students—though the last category does not include spending on mid-day meals). However, the empirical studies to date do not find significant correlations between these investments and either intermediate measures of system performance (such as teacher absence) or measures of outcomes (such as student test scores).

In the absence of rigorous randomized evaluations studying the impact of infrastructure improvement on learning outcomes in India, the broadest evidence to date comes from Muralidharan et al (2013). Using village-level panel data from a nationally-representative sample of over 1,250 villages across 19 Indian states, they find no correlation between changes in average village-level school infrastructure (between 2003 and 2010) and changes in enrollment in government schools, though they do find a small positive effect on the number of students attending school. They also find no correlation between changes in average village level school infrastructure and either teacher absence or student test scores, even though as noted earlier they find significant improvements in almost all measures of school infrastructure.

The major component of investment in inputs has been increasing teacher salaries and training, and reducing pupil-teacher ratios. The evidence summarized below again points to very limited impacts of these investments on improved learning outcomes. While there has been no experimental evaluation of the impact of varying individual teacher characteristics in India, there have been quite a few studies that control for lagged test scores and estimate the impact of teacher characteristics on learning outcomes in a value-added framework. The first point to highlight is that none of these studies to date finds a significant positive relationship between teacher training and increases in test scores of students taught by the corresponding teacher (see Kingdon and Teal 2010; Muralidharan and Sundararaman 2011b, 2013; Muralidharan 2012). Similarly, there is no correlation between teacher salary and student test score gains (Kingdon and Teal 2010; Muralidharan and Sundararaman 2011b; Muralidharan 2012), and if anything the correlations typically point to a negative relationship between teacher salaries and gains in student test scores.

While the test scores of the children who received the remedial instruction went up significantly, Banerjee, Cole, Duflo, and Linden (2007) find no impact

on the test scores of the students who remained in the original classroom with a smaller class size. These results suggest that reducing class-size may have a limited impact on improving test scores.

Muralidharan and Sundararaman (2013) study the impact of school level pupil-teacher ratio (PTR) on test score gains by using longitudinal data on test scores and changes in PTR over time and find significant but modest gains from reducing the school level PTR. Their estimates imply that reducing school level pupil-teacher ratio by half would at most yield gains in test scores of 0.25 standard deviations per year. Jacob, Kochar, and Reddy (2008) study the impacts of class size on learning outcomes in Andhra Pradesh using a control-function approach and also find significant but small effects of class-size reductions on test scores.

Further, the panel data analysis conducted by Muralidharan et al (2013) finds no correlation between changes in mean pupil-teacher ratio in a village and changes in normalized mathematics test scores. They also find evidence of a possible mechanism for this finding, which is that there is a very robust *negative* relationship between pupil-teacher ratio and teacher absence. In other words, *reductions* in pupil-teacher ratio over time were strongly correlated with *increases* in teacher absence. Thus, the impact of reducing class size by hiring additional teachers was mitigated by increased levels of teacher absence in the schools. This is consistent with the experimental evidence presented in Muralidharan and Sundararaman (2013) where they find that schools that were randomly selected to receive an additional contract teacher saw a significant increase in the absence rates of the regular teachers<sup>4</sup>. In other words, the marginal rate of teacher absence may be considerably higher than the average, which could limit the impact of reducing pupil-teacher ratio on improving learning outcomes.

Thus quantitative expansion in the forms of access, infrastructure and teachers has little impact on learning achievement of children in literacy and numeracy. It may be noted that correlation between literacy (defined as the capacity to read and write, with understanding, in any language) on the one hand and infrastructure as well as the educational outcome indicators on the other is estimated to be insignificant across states of India for 2007. As a result, the difference between two successive years in literacy rates of India tends to decline during 2001 to 2011 (the difference being 9.2 percentile points) during which globalisation process got strengthened, compared to the earlier period, i.e, during 1991-2001 (the difference being 12.6 percentile points), the literacy rates of India in 1991 being 52.2 per cent, 64.8 per cent in 2001 and 74 per cent in 2011. This occurred for most of the states during this period.

***Case Study of West Bengal on Learning Achievement of Children***

West Bengal is one of the prominent states of India which has felt the impact of globalisation through external aid, flow of external ideas and the changing curricula in subjects of study at the elementary, particularly the primary level. Since 2001 when the Paschim Banga Sarva Siksha Mission started functioning, huge amount of fund (including external aid) is being spent on infrastructural development of the schools. Of late due to globalization and liberalization there have been various changes in the western alias modern method of teaching as well as syllabi. In the past, the syllabi were a compact unit closely related to Indian society and natural environment; at present in the Western atmosphere, the syllabi have become abstract. They fit with the self-centred or the individual minds. Neither do the syllabi conform to the socio-cultural environment nor is the method of teaching in keeping with the minds of the children. According to many teachers these do not add sufficiently to the enjoyment of the student. Modern method of teaching is mostly objective and specially related to external behaviour and dazzleness of human beings. The children get pleasure by taking part in external activity with the teachers, their attendance in the classroom increases, but the real education which is mainly psychological, intellectual and heartfelt may not be realized. Some reports of the modern times state that the student comes to the schools but learns a little. To state otherwise, no strength to earn educational capacity or creative mentality is being roused in most of the students. Rana et al (2003) observed that the quality of education in the primary schooling system in West Bengal was one of the major concerns.

During the period of Paschim Banga Sarva Siksha Mission and in the globalization era the use of mother tongue has been prohibited to be used while teaching English in the class room. Many linguists of international repute opine that the use of bi-lingual method is necessary, logical and productive in teaching a second language like English. In the conventional method, the method of translation was given importance to strengthen the learning of foreign languages. Teaching in grammar was imparted for learning languages correctly. In the present method all these are considered unnecessary. It is said that to teach the foreign language English, the teacher in the class room will use only English language along with sufficient teaching learning materials. He will make the meaning and the main purport of the word understandable to the student by necessary gesticulation. It is further said, the child learners will think in foreign language, will talk in foreign language and as such there is no need to use mother tongue and translation. It may not be opposed in strong voice that it is totally wrong or unscientific, but we must keep it in mind at the same time that to

make such method successful we must adhere to some socio-cultural conditions such as—

1. While staying in the schools, it has to be ensured that all the subjects are discussed with the children in English, the second language.
2. There must be opportunity to the children to talk and hear English in their families and social environment.
3. There must be sufficient teaching learning material for learning English with the family.

Such teaching methods are clearly dependent on material and capital, and are necessarily mechanical. The role of the teacher is naturally very little. In fact in these days of the West-influenced neo-liberalism, a teacher is no more treated as a friend, philosopher and guide of the students. A teacher is thought to be the facilitator to the children's learning only.

In 1983 the West Bengal government decided to do away with English teaching at the primary school level, and the students were to start learning English from class VI. After some long two decades' discontinuation of such condition, the government of West Bengal, under criticism and several pressure from the public, decided to reintroduce English learning at the primary level since 2003. To provide fund for the Sarva Siksha Abhijan, the West Bengal government took DFID grant from the UK government. Text books that are made the title "My English Book" were prepared for the class I-IV following the advice and direction of the famous linguist of the British Council, Dr Ray Mackay. Teachers' Compendium to help the teachers in English teaching, and necessary module as to how to teach English by the teachers were also prepared. Everything was done in English language. A few days' teachers' training workshops at the primary level were held to fill in the teachers' deficiency in English teaching. Well-equipped resource persons were in charge of the training at the workshops. The workshops were conducted in English language. The resource persons and the teachers present at the workshops had to talk in English while the workshops were held. The aim of the workshops was that after coming back to the school after training, the teachers will behave in the same way in their own class rooms, ie, in the English class, they will use English Language only and following the teachers, the student too will speak in English. The logic behind such English teaching method is that language is learnt mainly by hearing, especially conversation. Thus a child on constant hearing from his parents and the neighbours will converse very easily in no time. Most of the educationists in West Bengal along with Mr Mackay believe that the learner will learn English in the way as it is possible for

them to learn mother tongue. For teaching English, highest importance was attached to conversation, and importance on grammar and traditional method was neglected. There was no place for any other language, specially mother language in the English task. Pronunciation and Bengali rendering of new words were absent in the text books. They argued that hearing from the teachers the students would be able to talk in the same tongue in the class rooms and thus learning of English language would be very easy to the students.

However modern the method of learning English be, whatever importance the famous linguistics attach on this method, the fact is that the students have progressed a little in this subject and a true picture got out of survey in this respect may be presented here.

A research study entitled “Low Mean and High Variance Quality of Primary Education in Rural West Bengal” prepared in 2010 by the Centre to Studies in Social Sciences, Calcutta under the supervision of Professor Jyotsna Jalan and financially assisted by the Ratan Tata Trust also shows that the Mean test scores in the mother language Bengali and in Arithmetic of the class IV students in the districts of Coochbehar, Murshidabad, Birbhum, Burdwan, South 24-Paraganas and North 24-Parganas were very low. The Mean test score of the child learners of class IV in Coochbehar district was 16.9% in mother tougue Bengali and 21.7% in Arithmetic. Just above it were the students of class IV of the district of Murshidabad and then Birbhum. The Mean test scores of the class IV students in these two districts were less than 20%, in case of mother tongue Bengali and in case of Arithmetic 23% and 26.5% respectively. Though the Mean test scores of the class IV students in the districts of Bankura and South 24-Parganas were a bit better, the same in mother tongue Bengali was about 25% and in arithmetic varies between 28% and 32%. The child students of this standard in the districts of North 24-Parganas did the best among these districts in the subjects–Bengali and Arithmetic but the mean test scores are 31.5% and 35.1% respectively. In the above survey report, the candidates of the class IV were placed at the 5 points scale following the West Bengal Board of Primary Education. As for example, 80-100 was considered to be very good, 65-79 good, 50-64 satisfactory, 35-49 average and below 35 not satisfactory. From the above survey it was found that only 25% students in Bengali and 30% students in Arithmetic scored pass grade. About 10% students scored no point either in Bengali or in Arithmetic. Less than 6% of the students getting pass grade could be ascribed good to very good.

As per research report of Jalan (2010), a majority of students in Coochbehar district did not get pass marks in Arithmetic and Bengali. The percentage of students not getting pass marks was the lowest in North 24-

Parganas district. A little above 50% of the class IV students of Murshidabad and Coochbehar districts were able to answer in Arithmetic of the class I standard. In 1995 Roy, Mita and Ray in research survey got almost the same figures and results.

A stratified random sample survey (2011-12) in government and government-aided schools of Paschim Medinipur and Purba Medinipur districts by us on the auspices of the Paschim Banga Sarva Siksha Mission has revealed that a major portion of the students reading in classes I-IV are suffering from different types and degrees of deficiencies. Less than 20% of students can read and write English correctly. To state otherwise, more than 80% of the students have been unsuccessful in earning the minimum skills in English. Two contrary types of classes of students are emerging due to the present system of education; on the one hand there are a few brilliant students with knowledge in English, and on the other there are huge number of students lagging behind with very poor knowledge in the subject.

Sau and Paul (2013) also observes that the average score in English of the class IV boys in Paschim Medinipur district of West Bengal was 36.66% and in the case of the girls it was 21.60%. Average score in Arithmetic in case of boys was 48.86%; in case of girl students it was 19.86%. In Purba Medinipur too the average scores scored in those subjects were of low standard.

The West Bengal Board of Primary Education follows a five point scale as follows: 80-100 marks (Very Good), 65-79 marks (Good), 50-64 marks (Satisfactory), 35-49 marks (Average) and less than 35 marks (unsatisfactory). The investigators use this five-point scale to categorise students into five grades. In addition, for minute details at the lower end we include two grades-Very Poor (1 to 19 marks) and Poor (20 to 29 marks) – and thus we work with larger number of grades (total nine). We observe that in two districts of Paschim Medinipur and Purba Medinipur combined at least 11 per cent of children (222 in number out of total number of sample 1981 children studying in Class IV) were unable to score any points in taking our tests in English while this percentage was 7.43 in case of mathematics, In Bengali, the mother tongue of the sample children, some of them are seen to be too low performing to score any point. In English, above 50 per cent of children and in mathematics above 30 per cent children are seen to have not made the state-mandated passing grade of above 34 per cent marks. Most of the children belonged to the low score categories of grades below satisfactory. Among those students who made the pass grade in our tests less than 6 per cent can be classified as very good (excellent) (Table 3).

**Table 3 : Distribution of Children Studying in Class IV in  
Paschim Medinipur and Purba Medinipur Districts Combined by  
Percentage of Marks Obtained in Subjects**

Grade		Bengali		English		Arithmetic	
		Number	%	Number	%	Number	%
0	Nil	9	0.51	222	11.21	147	7.43
	Very poor	188	10.72	681	34.38	298	15.06
	Poor	183	10.44	284	14.34	198	10.01
1 to 34	Unsatisfactory	516	29.44	1089	54.96	619	31.286
35-49	Average	395	22.52	287	14.51	287	14.494
50-64	Satisfactory	370	21.092	170	8.574	454	22.952
65-79	Good	306	17.468	105	5.306	245	12.368
80-100	Very Good	157	8.97	108	5.44	232	11.67
Total	-	1753	100	1981	100	1979	100

*Source:* Field Survey.

Percentage distribution of boys and girls children by grade obtained in Paschim Medinipur and Purba Medinipur districts combined shows that at least 16 per cent of boys and 12 of girls studying in Class IV were unable to score any points in taking our tests in English while this percentage was 10 for boys and 11 for girls in Arithmetic. In English, above 70 per cent of both boys and girls children and in Arithmetic above 40 per cent of them are seen to have not made the state-mandated passing grade of above 34 per cent marks. Among those students who made the pass grade in our tests less than 4 per cent can be classified as very good (excellent).

From the research works of Jalan (2010), and Sau and Paul (2014)<sup>5</sup> it is clear that the standard of success of the students in the examination in language and Arithmetic has been specially influenced by the number of students in the classroom. Where the student class room ratio is high, attainment of skill in language and Arithmetic has been low.

Jalan (2010) has shown that the impact of infrastructural differences of the schools on the knowledge of literature and Arithmetic of the learners is only 1%-2%. Of course, infrastructural facilities, such as sufficient seating space, nearness of play ground, separate and clean latrine for the girls students have a positive effect on the rate of attendance of the students. The infrastructural factors are closely related with drop outs as well. Children leave those schools midway in small numbers, where the schools have permanent buildings,

sufficient place in the class rooms to sit and separate proper latrine for the girls. It has also been shown that depending on whether the student-teacher ratio is high or low, the difference in scores of the students in Bengali and Arithmetic becomes 3% to 5%. Such result is found in gender difference as well. She further states that if the student-teacher ratio becomes more than 40, scores obtained by both the boys and the girls get reduced.

One of the reasons why the qualitative standard of education is getting down gradually is that education has been made narrow, light and business-centric in the era of globalization. The conception of marrow less education may be of two decades old, but the same is getting much weight at present. As a result many text books are being so written as have no depth of subject or detailed discussion. For this reason development of genuine knowledge of the learners as well as its application has become almost impossibility and the qualitative standard of education is getting reduced. Maharatna (2014) observes, "Through more 'student friendly curriculum and evaluation, this could leave more time for leisure and entertainment, culminating in an apparent paradox of better results going hand-in-hand with declining standards. This seems to be the current educational scenario in many advanced and developing countries."

The relation between syllabi and qualitative education is very close. In 2005 a National Syllabus framing was done under the leadership of Professor Yaspal. According to the NCT(National Curriculum Framework) 2005, curriculum will be framed on consideration of the socio-cultural and natural condition of the places where the children are born. There is grave doubt if the text book for learning languages specially for learning English in the different districts of West Bengal prepared up to 2012 were so done in the light of the socio- environmental condition of the student. Rather it is found that the text books both in Bengali and in English are not generally in keeping with the nature and environment of the student. More than 70% of the child learners in West Bengal live in nature and traditional socio-cultural environment. A child grows up and gets education in its family's socio-cultural environment. But the textbooks do not reflect that environment. Besides, in the elementary education stage where the main aim is to get ability in language and Arithmetic, the defective text books and teaching method retard the fact of growing dexterity. The matter of dexterity in learning of language may be shown thus in separate parts– 1. Recognising the alphabets, 2. Reading the words, 3. Reading the sentences, 4. Understanding the meanings of words and sentences, 5. Speaking in correct language.

While supervising the teachers' training in the Purba and Paschim Medinipur districts as well as some other districts, Sau (2013) found that at the time of speaking in English many primary school teachers, even some district level

superior teachers and Master Resource persons were speaking in incorrect English. It is worth-mentioning that many English linguistics and NCF 2005 opine that use of English should be correct and idiomatic.

The most important institutional step in respect of child education is the passing of the law for free and compulsory education of the children. Most of the parts of this Act are important but in the light of quality education some deficiencies do not escape the view. The first weakness is want of any provision for teachers according to the number of classes and students. This Act states that if the number of students at the primary stage is 60, the member of teachers will be 2, up to 90 it will be three, and it will be 4 up to 120. The problem is, in the primary schools there are minimum five and maximum six classes including the infant class. How will the Act provided 2, 3, or 4 teachers will satisfactorily and qualitatively do the duties of classroom transactions and teaching etc.

Under such circumstances the number of teachers is less than the class units, some classes / clusters are needed to be made taking students of different grades together. Consequently it becomes difficult to maintain the standard of teaching or to improve the same. ASER- 2010 in its report has shown that such multi-grade grouping of children is rampant in West Bengal as well as in different states of India. In case of the government and government-aided schools, from even the multi-grade schools teachers are taken off to some non-academic duties such as preparation and correction of voters list, Census etc without providing for alterative teachers, and it is a matter of grave concern to think which standard these primary schools are forced to attain during those days. Besides, the teachers of the primary schools and even the upper primary schools are diverted to prepare different types of official papers related to accounts of the Sarva Siksha Misson and the MDM. The importance of teaching gets lost in the hurry to prepare such papers. To add to it, the teachers have very often to attend various training workshops, so that class teaching goes on neglected day after day and the schools run on some acute condition.

Children at the primary stage of learning are found to be deficient not only in English but also in their own language. Deficiency in mother tongue has an adverse impact on developing language skills in English and numeracy skill. Some children studying at primary and even at upper primary levels are seen to be incapable of reading the problems set in the book on arithmetic and thus they fail to work out the same.

Family, social environment and cultural atmosphere have sufficient impact on the development of the child. The environment at the school is different from them. A major section of the students at the government and government-aided schools are of the first generation, and their parents are still illiterate. So,

from the parents no help is expected in respect of studies, not to speak of English. Besides, in these days of nuclear family system mean families is so self-centred in that conducive social atmosphere for helping the neighbouring students has become very difficult. There is gross want of cultural activities whether inside the families or outside them. So the child learners get no opportunity at all to converse or speak in English outside the classroom of their schools. Absence of faith of the guardians in the alien method of teaching English language and also class teaching has made the students bound for craving for private tuition. Field survey shows that about 95% of the students of the primary schools go to the private tutors to learn English. Though, of course, this makes no remarkable change of the students, and the reason has been that the methods of teaching at the school and that before the private tutors are opposite. The students have to fall in a fix in the face of such contrary methods.

### ***Changes in the Management Structure of Elementary Education***

There is perhaps no greater indicator of the quality of government schooling as perceived by parents than the increasing extent to which parents are eschewing free government schools (in fact government schools have a 'negative' cost once the various incentives such as mid-day meals, free text books, and other benefits are accounted for) and moving their children to fee-charging private schools. Desai, Dubey, Vanneman, and Banerji (2009) showed using nationally representative data from 2005, that 58% of students in urban India attended fee-charging private schools. The annual ASER reports show a steadily increasing trend in private school enrollment from 18.7% in 2006 to 25.6% in 2011—with these increases being broad based across states. These numbers highlight that India has a share of private school enrollment that is comparable to a country like Chile—that has a fully voucher-based school system!

The management of primary and upper primary schools did have undergone remarkable structural changes in the era of globalization. As per *Selected Educational Statistics 2005-06 Time Series*, during 1973-74, 93.34 per cent of primary schools in India was under the management of Government and local bodies (Government 50.88 per cent and local body 42.47 per cent) and 6.65 per cent under private management (Private-aided 5.01 per cent and 1.64 per cent private un-aided). During 2005-06 the share of Government and local body combined registered decline to 89.11 per cent (Government share declined to 42.60 per cent and share of local body increased to 46.51 per cent) while that under private management recorded increase to 10.88 per cent (Private-aided declined to 5.01 per cent but private un-aided increased to 7.79 per cent). Similar is the scenario in respect of upper primary school level management. During 1973-74, 77.57 per cent of upper primary schools in India was under the

management of Government and local bodies (Government 50.71 per cent and local body 26.86 per cent) and 22.42 per cent under private management (Private-aided 17.75 per cent and 4.67 per cent private un-aided). During 2005-06 the share of Government and local body combined registered decline to 71.97 per cent (Government share declined to 43.17 per cent and share of local body increased marginally to 28.80 per cent) while that under private management recorded increase to 28.02 per cent (share of private-aided schools sharply declined to 6.14 per cent but that of private un-aided schools increased significantly to 21.88 per cent). During 2006-07 percentage of primary schools was 18.86, which increased to 21.51 in 2012-13 while that of government schools declined from 80.83 to 75.90.

Rural India is served mainly by government and government aided schools. As per Flash Statistics 2012-13, 85.84 per cent of total schools are located in rural areas. Urban areas, however, have a significant presence of private unaided schools.

### ***Conclusions***

In elementary education the changes brought about by the globalization process have been manifested in modes of financing, administration and curriculum. Following the internationally declared objective of achieving "Education for all" in the Jomtien Conference (1990) more and more aid resources from abroad flowed to India and became directed at elementary education. There has been remarkable and significant quantitative expansion of elementary education during the globalization era, which got accelerated over years. But this phenomenal quantitative achievement has not translated itself into the improvement of quality education of children in terms of their learning achievement in subjects like language and Mathematics. A situation has developed where children go to schools but learn and acquire little while school facilities are massively developed. Thanks to the prevalence of objective type questions in the recent curricula of subjects percentage of marks secured by children is high enough but this does not signify the good quality of their education.

Both contents of subjects and the teaching methods are largely influenced by the globalization process where major accent is on information-based learning. Assimilation of ideas based on information and experiences takes the back seat or ignored and hence knowledge which is power is hardly generated in children. Wisdom which is generated through application of knowledge to solve problems is hardly developed in children. Modern teaching methodology in English and Mathematics involves round-about teaching and learning process which is too lengthy and complex to follow correctly by children. Logical senses in subjects,

particularly in English are hardly developed in them since accent on learning structure of sentences through English grammar and the correct use of words and sentences are scarcely emphasized and developed in children, particularly at the primary stage. As per National Curriculum Framework 2005 learning of subjects ought to be child-centric and multi-lingual but in English at the primary stage teachers' training and class room transactions are largely conducted unilingually, i.e., in English for the dubious achievement of speaking skill and oral fluency (even incorrect) of children. The NCF 2005 hold that use of English be correct and idiomatic. Quality education of children demands quality teachers, their academic culture, sincerity, devotion, dedication, inner urge or motivation, earnestness, creativity, innovation and commitment to the services of education, which are either lacking or deficient or stifled in the era of globalization while in many schools elementary education is made highly capital-intensive as in the western developed world.

The psychological and socio-cultural foundations of education which are long cherished in India are largely ignored while following the Western model of elementary education. Supply factors like capital and technology may be necessary but these need not supersede the role of human beings including teachers, parents, society and that of nature. While these physical factors promoted by the globalization processed alone can do little they can supplement human efforts to achieve the goal of quality education of children.

Elementary education being the social process primary role has to be played by man, his culture and his environment. Competitive globalization can do little to improve elementary education in a developing country like India which has a long rich culture while globalization in the form we witness today is of recent origin. Cooperation and construction constitute the vital need of the hour. Teachers must improve their competencies and commitment to educational service. Let us develop and improve whatever best we have as our own. The US education system, which promotes bi-lingualism as opposed to diglossia has, however, some lessons for India if the attempt is to make English learning more easy, enjoyable and useful (Mohan, 2014.). Schooling is foundational for children. These foundations should be well-rounded knowledge, skills, wisdom and values which would prepare the child in a world that is torn apart by conflicting values. Globalization needs to be broadened to accommodate quality issues of children, not being confined to narrow concept of elementary education that is business-centric. To be meaningful and sustainable it needs to be so modified in form and spirit and adjusted as to fit in the stage of development and the socio-cultural context and requirements of the developing countries like India.

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### Foot Notes

- 1 States of India with elementary stage consisting of grades 1-7 are Andhra Pradesh, Assam, Gujarat, Karnataka, Kerala, Orissa and Maharashtra.  
States with elementary stage 1-8 are Bihar, Chhattisgarh, Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Madhya Pradesh, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarakhand and West Bengal.
- 2 Gross Enrolment Ratio (GER) is defined as the percentage of the enrolment in the Primary (classes I-V) and Upper Primary (Classes VI–VIII) and/or I–VIII to the estimated child population in the age groups 6 to below 11 years and 11 to below 14 and/or 6 to below 14 years respectively. Enrolment in these stages includes under-age and over-age children. Hence the total percentage may be more than 100% in some cases.
- 3 The Gender Parity Index at any level of education is the ratio of the GER for females to the GER for males for the particular level of schooling.
- 4 Similar findings are reported by Duflo, Dupas, and Kremer (2012) in an experimental study of contract teachers in Kenya, suggesting that this may be quite a general result.
- 5 The research report was prepared from financial assistance of the Paschim Banga Sarba Siksha Mission during 2011-12.

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## Information and Communication Technology : Evolution and Constraints for Transaction in School Education

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### Abstract

*Information and Communication Technology (ICT) has been increasingly integrated into teaching-learning process throughout the globe. Despite huge investments on ICT, adoption and integration of ICT into teaching-learning have been limited. This paper explores the evolution of ICT, its initiatives in India and identifies the key issues of ICT implementation in schools. National and international journals, project reports, government documents, doctoral thesis, seminar/conference proceedings and research articles have been used as source of secondary information. The evolutionary trend of ICT in education has been traced. The central government as well as the state government has taken up various programmes related to ICT in school education. Prominent among them is the centrally sponsored scheme-ICT@Schools that is being implemented in a phased manner. The paper identifies the constraints for the implementation of ICT in the schools. Lack of funds, supportive infrastructure, access to ICT, integration of new and old technologies, content development, ICT integration, use of mobile technology, teacher workload, capacity building of teachers, lack of awareness and interest, language barriers, technical support, monitoring and supervision were identified as the constraints for the successful implementation and integration of ICT in school education. The study recommends restructuring of the managerial system in the school education to take effective decisions to tackle these issues.*

**Key Words :** *ICT, School Education, Teaching-Learning, Implementation, Constraints*

### Introduction

The phrase ICT which stands for information and communication technology had been cited in educational literature since 1980s. But it became popular in

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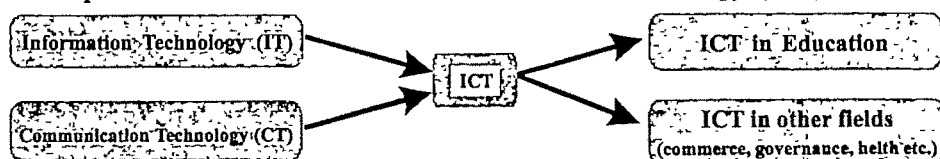
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the new Millennium after the arrival of Internet and the World Wide Web. ICT encompasses all those gadgets that deal with the processing of information for better and effective communication. In education, communication process takes place among teachers, students, management and administrative personnel which requires plenty of data to be stored, disseminated or transmitted as and when required. In recent times there is a growing recognition that ICT can be designed to contribute to improve teaching-learning and management processes in schools. ICT today is mostly focused on the use of computer-based technologies. Worldwide ICT adoption has developed the digital divide. The digital divide refers to the inequality in utilization of information and communication technologies (ICTs). It is the gap between those who have access to and control over technology and those who do not (Evers & Greke, 2004). So the introduction and integration of ICTs at different levels of education is the most challenging job. Failure to meet the challenges would further widen the knowledge gap and mean deepening of existing economic and social inequalities. Keeping the context as the backdrop the paper focuses on (1) tracing out the evolutionary trend of ICT development, (2) exploring the present scenario of ICT in Indian schools with special emphasis on West Bengal and (3) to identify the key factors related to the implementation of ICT in schools. To satisfy these objectives secondary information taken from national and international journals, project reports, government documents, doctoral thesis, seminar & conference proceedings and research articles have been used.

### ***Information and Communication Technology***

Information technology as a term evolved in the 1970s. Its basic concept, however, can be traced to the World War II alliance of the military and industry in the development of electronics to replace manpower with machine power. Information technology (IT) encompasses all forms of technology used to create, store, exchange and use information in various forms like data, voice, images, motion pictures, multimedia presentations etc. IT chiefly involves computer related technologies. On the other hand Communication Technology (CT) implies the knowledge, skills and understanding needed to exchange information. Technologies such as telephone, telex, facsimile, radio, television and more recent computer based technologies like intranet, internet and email are included in communication technology. The convergence of the IT and the CT results in development of Information and Communication Technology (ICT).



Thus ICT is like an umbrella that covers a wide range of the old and traditional technologies as well as new and modern technologies. A list of ICT devices is shown in Fig. 1.

	Traditional (old)	Radio, television, telephone, slide projector, overhead projector, tape recorder, videocassette recorder, filmstrips, film projectors etc.
ICT	Modern (new)	Computers, laptops, tablet computers, personal digital assistance (PDAs), iPads, interactive televisions, satellites and wireless technology, internet, email, chat, video & audio conferencing, multimedia projector, local area network (LAN), wide area network (WAN), mobile phones, voice recorder, digital camera, web camera, data and media storage devices like compact disc (CD), video compact disc (VCD), digital virtual disc (DVD), pen drives and such other gadgets.

Figure 1 : List of ICT devices

However, ICT today is mostly focused on the use of computer based modern technologies. Old technologies are essentially the analogue ones where as the new technologies are purely digital. Livingstone explained “new” with reference to the “newness of technology”. But what is new for the western world is not necessarily so for the rest of the world. This means that ‘newness has a social context and cannot merely be defined in terms of time scales or in terms of the technological innovation’ (Livingstone, S. 1999). ICT has revolutionized every sphere of life. ICT has been exclusively used in business transactions, commerce, banking, government administration, health and many other sectors. Likewise ICT has greatly contributed to education sector too.

### ***Evolution of ICT in Education***

In the early 1900s, Edward Thorndike brought the use of empirical investigation in instructional techniques and learning theory. After Edison’s invention of the motion picture, films attracted the attention of educators. In 1920, Frederic Burk developed the Dalton and Winnetka Plans for individualized instruction. It helped learners to master basic skills at their own pace before they can go to new skills. A spurt in the growth in accessibility and quality of films and radio broadcasting were seen during 1930’s and 1940’s. Sound recording brought the transition from visual to audio-visual films. These technologies predominated education till 1970s. The educational implications of technology have been enlisted in figure 2.

Time line	Technological advancements	Major educational implications
920's	Radio broadcasting, Films, Filmstrips,	Frederic Burk developed Dalton and Winnetka Plans for individualized instruction.
1930's-1940's	Great growth of film, radio, sound recording, visual to audio-visual, overhead projection etc.	US government purchased 55,000 film projectors and created over 400 training films between 1943-45 as a key instructional media for the military and industry (Reiser, 2002).
1950's	Instructional television	Programmed instruction movement began.
1960's	Audio-visual Instructional designs.	Personalized system of instruction, Audio tutorial approach, Program for Learning in Accordance with Needs (PLAN) etc.
1970's	Apple II computers in schools	Individually guided education—IGE, computer-assisted instruction—CAI
1980's	Apple Macintosh, Microsoft & Windows computers with mouse and 4.7 inch CD-ROM	BASIC to illustrate a concept, LOGO for children to encourage thinking about mathematics in a constructivist approach.
1990's	Multimedia technologies, Internet, Optical Storage – CD, DVD, teleconferencing.	Advances in computer technology, especially multimedia and internet, made learning more learner-centered (Reiser, 2002).
2000 to Present	Virtual reality, Internet based training, e-Learning, m-Learning, Social networking and blogs, online text books and eBooks, Open Learning Resources, Wikipedia, Web-based learning and courses	Regular schools are being transformed into smart schools making classrooms highly equipped with ICT tools. Technological advancements in ICT have been greatly leveraged by Distance Education and Higher Education Institutes across the world.

Figure 2 : Educational implications of technological advancement from 1920's till date

Since the 1950s, four generations of computers have evolved. Each generation reflected a change to decrease size but to increase capabilities of operations. The first generation used vacuum tubes, the second used the transistors, the third used integrated circuits, and the fourth used integrated circuits on a single computer chip. Form late1970s, the microcomputers became available to the general public. The enthusiasm surrounding this tool led to increasing interest of using computers for educational and instructional purposes. The earliest

examples of computer-assisted learning (CAL) were developed by enthusiastic teachers with a computer interest and it focused on rote skills training (Reiser, R.A. 2002). The Beginner's All-purpose Symbolic Instruction Code (BASIC) was one such popular CAL during late 1970s and 1980s. It was designed to be easy for beginners, provide clear and friendly error messages, be interactive and respond quickly. It was focused on providing computer access to non-science students. BASIC was particularly useful for education to illustrate a small concept in a dozen of lines only (Anderson & Ronnkvist, 1999). In 1980, Seymour Papert introduced LOGO, a constructivist-programming tool for children. It was focussed to encourage rigorous thinking about mathematics. It was the first tool specifically designed to enable children to learn by discovery (Papert, 1980). Then Apple Computers introduced the Macintosh computer with the mouse and the icon for computer interaction. By 1983, computers were being used for instructional purposes in more than 40 percent of all elementary schools and more than 75 percent of all secondary schools in the United States (Reiser, 2002). In 1990, Microsoft Corporation developed Windows. The next phase saw the introduction of generic softwares like word processing, spreadsheets, painting programs and database management systems. Computers were used to support other curriculum specific activities after the introduction of Windows '95, when computers took-up the multimedia technologies. The internet of today was born when Vint Cerf developed the internet protocol. Robert Cailliau and Tim Berners-Lee in 1989 envisaged a service called World Wide Web (WWW) that could share files, documents, information, dialogue, graphics and sound files. In the United States, school teachers reported that computers were mainly used for teaching computer-related skills such as word processing (Anderson & Ronnkvist, 1999). From late 1980s, the term 'computers' started getting replaced by 'IT' (information technology) which signified a shift of focus from computing technology to the capacity to store and retrieve information (Pelgrum and Law, 2003). This was followed by the introduction of the term 'ICT' (information and communication technology) in late 1990's when e-mail started to become available to the general public (Pelgrum, W.J. & Law, N., 2003). Since 1995 there had been a significant increase in the amount of technology available in the schools across the globe. In the US there was one computer for every six students in 1998. Internet access in US schools increased from 50% in 1995 to 90% in 1998 (Anderson & Ronnkvist, 1999). The learning environment started becoming web-based and accessed through a web portal. Just like in a real-world classroom, a student in a virtual classroom participates in synchronous instruction, which means that the teacher and students are logged into the virtual learning environment at the same time. Virtual classroom software applications often employ multiple synchronous technologies, such as

web conferencing, video conferencing, live streaming, and web-based VoIP (Voice over Internet Protocol) to provide remote students with the ability to collaborate in real time. To enhance the educational process, applications may also provide students with asynchronous communication tools, such as message boards and chatting facilities.

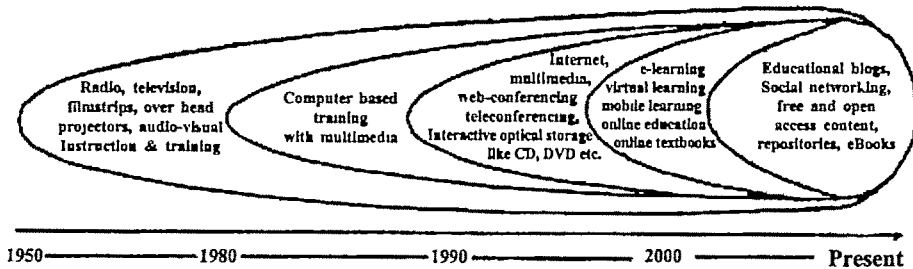


Figure 3 : A trend line of ICT in Education

Use of Internet for instructional purposes has been rapidly growing in higher education. Enrolment in distance learning courses in the United States nearly doubled from 1994-95 to 1997-98. Number of higher education institutions offering distance-learning courses through asynchronous internet-based technologies increased from 22% in 1995 to 60% in 1998 (Anderson & Ronnkvist, 1999). Technologies in recent times have greatly contributed to develop educational blogs which are web based digital diaries, various social networking sites, open and free access sites like wikipedia, online text books and research repositories. A trend line is shown in figure 3.

### ***ICT initiatives in India***

In India, the National Policy on Education 1986 and its modification in 1992 stressed upon employing educational technology to improve the quality of education. The policy statement led to two major centrally sponsored schemes, namely, Educational Technology (ET) and Computer Literacy And Studies in Schools (CLASS). Accordingly a more comprehensive centrally sponsored scheme—"ICT @Schools" was launched in 2004. The significant role of ICT in school education has also been highlighted in the National Curriculum Framework-2005. Use of ICT for quality improvement also figures in Government of India's flagship programme on education, Sarva Shiksha Abhiyan (SSA). Again, ICT figured comprehensively in the norm of schooling recommended by Central Advisory Board of Education (CABE), in its 2005 report on Universal Secondary Education (MHRD, 2012). The comprehensive draft to the National ICT policy in School Education, revised in 2012, emphasized the tremendous potential of ICT for enhancing and improving

quality of school education. This draft policy document proposes implementing a programme for ICT literacy of students for all secondary schools. To foster an environment of ICT-enabled teaching-learning, competent teachers are being encouraged by the National Award for Innovative use of ICT in education. Normal classrooms are turning into SMART classrooms. Smart classrooms are specialized classrooms equipped with a wide range of ICT facilities including computers, projectors etc. Each school will be equipped with at least one computer lab. A minimum of a 10:1 student computer ratio will be maintained (Pricewaterhouse Coopers, 2010). EDUSAT is the first Indian satellite built exclusively for serving the education sector. It is mainly intended to meet the demand for an interactive satellite based distance education system for the country. It strongly reflects India's commitment to use space technology for national development, especially in remote and rural locations. It provides educational content to schools through 'receive only terminals' (ROTs) installed at the schools of several states like Karnataka, Kerala etc. The schools have been provided with a teachers' handbook, which provides the broadcast schedule in advance. This helps the teacher to integrate the video lessons (Kasinathan, G and Vishwanath, K. 2010). A large number of ICT initiatives are ongoing at all levels of education in India, some at a pilot stage while others are operating full scale. Major initiatives operating at a national level in educational institutions are IT @ Schools and ICT@Schools Scheme, ICT in Sarva Shiksha Abhiyan, EDUSAT—Education Satellite, ICT in NVS and KVS, ICT in National Institute of Open Schooling, Gyan Darshan and Gyan Vani, Sakshat Portal, National Knowledge Network, NME-ICT and Aakash Tablet project, National Repository of Open Educational Resources etc.

### *ICT initiatives in West Bengal*

**Table 1 : Number of schools under ICT@Schools scheme**

State/All India	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	Total
West Bengal	—	200	—	343	1400	—	2000	—	—	3943
All India	650	2720	1110	21080	24650	9935	19482	14062	2255	95944

Source : MHRD, 2013

The West Bengal IT Policy 2003 recommends setting up a state wide delivery backbone to support e-governance, e-commerce, distance education and provide

an efficient citizen interface. The ICT@School scheme started in the state with 200 schools in the year 2005 and extended to further 343 schools in 2007-08. The scheme was integrated under the Rashtriya Madhyamik Shiksha Abhiyaan (RMSA), in 2008-09 and the state got sanctions for 1,400 schools. Each of these schools was provided with 10 computers, 10 UPSs, 1 scanner, 1 web camera, 1 projector, and 1 printer. Further, in 2010-11, another lot 2000 schools came under the same scheme (table 1.). But only five government schools have been designated as *Smart Schools* since 2012 (table 2.). It is also noted that none of the schools are from Kolkata. These smart schools are well equipped with a wide range of ICT facilities.

The SCERT (State Council of Education Research and Training) has been engaged in developing the media resources for television and radio since 2006. Extensive workshops were undertaken with teachers to formulate the strategy for developing content. It was realized that simply digitizing the textbooks would not be sufficient and hence the teachers were asked to be actively involved in the creation of the content, where they wrote the scripts and gave voiceovers simulating a classroom session. This exercise is done at the district levels at the District Institute of Education and Training (DIET) labs and at the state level at SCERT headquarters. All the DIETS have been equipped with ICT for creation of digital content. This content is put into an interactive multimedia package by Center for Development of Advanced Computing (CDAC), who works closely with SCERT in packaging the content. SCERT has created 11 lessons for classes VI, VII, and VIII and has handed these over to Sarva Siksha Abhiyan authorities for deployment and circulation. Since 2005-06, SSA sponsored 'Bidyathider Jonno Onusthan' to broadcast these lessons, prerecorded at the Rabindra Bharti University Studio (Pricewaterhouse Coopers, 2010). West Bengal has also initiated the process of private participation to promote the use and benefits of ICT in the field of education. An innovative product manufactured by IETS, a private company, is the KYAN. It is a community computer developed by IETS, in collaboration with the Indian Institute of Technology (IIT), Mumbai. It is designed by Dr. Kirti Trivedi in 2004 and commercialized by IETS in 2007. The device contains a computer with inbuilt projector, content, speakers, and has wireless keyboard and mouse. A pilot initiative was undertaken in 2007-08 in 65 government schools across two districts, namely, Burdwan and Bankura of West Bengal. The initiative covered 500 teachers and 40,000 students. The project is currently in the fifth phase and is being deployed on a small scale in almost all the districts. Phase wise deployment of KYANs is: Phase I (2007) - 65 schools in Bankura and Burdwan; Phase II (2008)—51 schools in North 24 Parganas; Phase III (2009)—90 schools across 6 districts (15 each in Coochbehar, Malda, Nadia, Purulia, Howrah & South 24 Parganas); Phase IV (2009)—115 schools

across the state. The content in the KYAN consists of 1,090 lessons on various hard to teach topics in all the subjects from class I to X, and is preinstalled in the machine. A state level impact assessment study of the ICT@Schools project for West Bengal has been undertaken in 2013-14. So far survey has been completed in three districts—Burdwan, Birbhum and Bankura. In these three districts ICT has an overwhelming impact among the student community in schools. The e-content developed by the vendor (IETS) for class VII, IX & X has been in Bengali vernacular along with voice application (State Report Card, 2014)

**Table 2 : Smart Schools in West Bengal under ICT@Schools scheme**

i)	Bankura Zilla School, Bankura
ii)	Jalpaiguri Zilla School, Jalpaiguri
iii)	Nawab Bahadur's Institution, Murshidabad
iv)	Purulia Govt. Girls' School, Purulia
v)	Rani Binode Manjari Govt. Girls' School, Paschim Medinipur

Source : Government of West Bengal, 2012

### ***Key Factors of Implementation***

The result of the follow up study indicates that a teacher requires access to the ICT infrastructure and should be given the proper opportunity to develop the expertise to use the machines and software. The studies also indicate policy-makers, administrators, and teachers are using a wide variety of tools and strategies to improve access to learning opportunities, improve the quality of education and make effective use of the limited resources. But they face hindrances. ICT integration and implementation in the classrooms is a very challenging job, specially in the developing countries (Akbaba-Altun, 2006; Light & Rockman, 2008; Somekh et al., 2003; Vyasulu & Sinha, 2003).

Governments in many countries have invested in ICT to improve teaching and learning in schools. Developed countries have made massive investments in this field. For example in UK government spent on educational ICT £2.5 billion in 2008–09, US expenditure on K-12 schools was \$6 billion in 2009 (Nut, 2010). But educational interventions on ICTs to create the infrastructural setup in developing countries suffer from squat budgetary allocations as compared to the developed countries (Gulbahar, 2007). High initial cost of purchasing and setting up the requisite infrastructure, the maintenance and upgrade costs, as well as the cost and effort of supporting such infrastructure are also roadblocks to the successful usage of ICTs in schools. So the **lack of funds** is a major constraint.

Implementation of educational technology in a country sits on top of the national telecommunications and information technology infrastructure. The developing countries face a tremendous challenge of inadequate infrastructure to support the deployment of ICTs in schools (Amutabi and Oketch, 2003). Infrastructure related to power supply and access to internet in schools remains a key bottleneck. Existing infrastructural facilities in schools need to be improved. Small-size classrooms, interrupted electricity, few television sets, unavailability of technicians for maintenance are the infrastructure related problems in Indian schools (Mukhopadhyaya and Sinha, 1993). Thus **limited supportive infrastructure to deploy ICTs** is another key issue to successful implementation of ICT. Effective integration of ICT into teaching-learning depends mainly on the availability and accessibility of ICT resources such as hardware, software and courseware. Access to ICT infrastructure and resources in schools is a necessary condition to the integration of ICT in education. Only access to hardware and software is not sufficient. Access to suitable courseware is crucial to support teaching and learning (Tondeur, Valcke, & van Braak, 2008). Access to appropriate technology should carefully consider that affordances and constraints of a technological tool (Vyasulu & Sinha, 2003). The study of Dexter & Reidel, 2003 revealed that computers were more available to teachers than students due to affordance. So the third constraint is found out to be lack of **access to ICT** which is still limited for most students. Older technologies such as print, radio, and television are more common in most part of the world, unlike the recent technologies such as Internet, e-mail, and wireless communications. This is largely due to lack of infrastructure that had not allowed the adoption of newer technologies as extensive as the older technologies. Akbaba-Altun (2006) stated there were general computer integration issues such as very few computers, slow internet connections, insufficient software in the native language. Moreover, the IT classrooms in existing older classrooms were not designed according to the needs of ICT classrooms (Akbaba- Altun, S. 2006). In recent times, however, it has been noticed that these newer technologies are gaining prominence and are being integrated with the older technologies to make ICT applications in education more effective. The Radio Sagarmatha in Nepal is one of the first community radios in South Asia since 2000. It is a radio-web-browse model featuring news and interviews with relevant ICT resource persons (UNESCO, 2008). So the fifth challenge is the **integration of new technologies with existing technologies**. Learning objects may also be digital assets. Digital learning objects can be identified, tracked, referenced, used, and reused for a variety of learning purposes by course designers, managers, trainers, content writers, and learners as diverse chapter in a book, a piece of text, a video or

audio clip or visuals on an overhead transparency or PowerPoint slide and can be used in a variety of teaching-learning settings (Lim, 2007). So **developing the content** is very important issue. Studies highlighted the importance of taking a holistic approach towards the integration of ICT into the classrooms and curriculum. When effectively integrated into a learning environment, researchers have demonstrated that ICT can help to improve students' content knowledge and support the development of complex thinking skills (Kozma, 2005; Kulik, 2003; Webb & Cox, 2004). However, ICT alone cannot create this kind of teaching and learning environment. Teachers must know how to structure lessons, select resources, guide activities, and support this learning process; many traditionally-trained teachers are not prepared to take on these tasks. To use technology effectively, the pedagogical paradigm needs to shift toward more student-centered learning (Bransford, Brown, and Cocking, 2000). Thus, the issue of **ICT integration into curriculum** is the seventh challenge. In the developing countries of South Asia, mobile phones have almost ubiquitous presence. There is an increasing interest in the opportunities offered by this technology. It is observed that rural people who are not familiar with English numerals and alphabets can easily adapt dialing numbers and using text SMS. They can type text in local language using English alphabets. Thus mobile learning has huge potential in rural India. Traxler (2007) argued for using mobile-networked technologies in school education. Wireless internet and 3G mobile technologies offer a way of making ICT more accessible to schools. It is time to harness the full benefit of **mobile technology** in education. The study of Samarawickrema & Stacey (2007) revealed that the workloads of teachers negatively influenced their acceptance of technology in the classroom. Similarly, Neyland (2011) highlighted the increased workload of teachers was alarming and was pushing many teachers to the limit. Principals reported that teachers are already overloaded and could not cope with the pressure from ICT training. It is necessary to adjust the workload of teacher (Franklin, 2007). Thus the next challenge is the **teacher workload**. In most of schools in the subcontinent, the teachers are overloaded, less motivated, inadequately trained and often deal with inconvenient working conditions. In such an atmosphere, building the capacity of teachers to deal with ICTs in classrooms is a challenge. Professional development is an essential part of every teacher's development to improve the skills and knowledge to integrate ICT into the curriculum (Penuel, 2006; Ward & Parr, 2010). A variety of types of professional development are needed to meet not only the varying needs of individual teachers, but also the varying ways in which ICT can be used (Ward & Parr, 2010). So **Capacity building of teachers** is the next constraint.

Constraints for implementation
<ul style="list-style-type: none"> <li>o Lack of funds (Gulbahar, 2007)</li> <li>o Limited supportive infrastructure (Mukhopadhyaya and Sinha, 1993)</li> <li>o Lack of access to ICT (Dexter &amp; Reidel, 2003)</li> <li>o Integration of new and old technologies (Akbaba-Altun, S. 2006)</li> <li>o Content development (Lim, 2007)</li> <li>o ICT integration into curriculum (Kozma, 2005; Kulik, 2003; Webb &amp; Cox, 2004).</li> <li>o Use of mobile technology (Traxler, 2007)</li> <li>o Teacher workload (Franklin, 2007).</li> <li>o Capacity building of teachers (Penuel, 2006; Ward &amp; Parr, 2010).</li> <li>o Lack of awareness and interest of teachers (Penuel, 2006).</li> <li>o Language barriers (Penuel, 2006).</li> <li>o Technical support, monitoring and supervision (Tong &amp; Trinidad, 2005; Korte &amp; Husing, 2007)</li> </ul>

Figure 4 : Constraints for implementation of ICT in School Education

There is a general lack of awareness about the utility of ICTs in education. Many ICT projects fell short of expectations because the educators continue working within a traditional method of rote learning (Gersten, Chard, & Baker, 2000). Researchers have ranked teachers' belief and practice as one of the key factors for successful ICT integration (Penuel, 2006). Thus lack of **awareness, interest and belief** of stakeholders act as constraints to successful implementation of ICT. English is the dominant language of the internet and digital world. An estimated 80 percent of online content is in English (Penuel, 2006). A large proportion of the educational software produced in the world market is in English. Proficiency in English is not high, especially outside metropolitan areas in India. Development of educational contents, software, packages and websites in regional language is highly desired. Thus, **language barrier** is another major factor to integration of ICT in schools. Malfunction or breakdown of a computer causes serious interruptions in teaching-learning. Teachers get discouraged from using computers because of fear of equipment failure. Due to lack of technical support, teachers become frustrated resulting in their unwillingness to use ICT (Tong & Trinidad, 2005). Teachers argued that ICT support in classrooms saves valuable class hours without wasting time for troubleshooting technical problems. In Ireland, 85.3% of schools reported technical support and maintenance as a 'high' or 'very high' priority (Becta,

2004). In a study by Korte & Husing, 2007 in the schools of Britain and the Netherlands teachers appreciated the significance of technical support, monitoring and supervision to help teachers to integrate technology into their teaching. Further it can be noted that feedback from teachers helps the educational administrators to reorient ICT schemes as and when necessary. So lack of proper **technical support, monitoring and supervision** has been found out to be key to the successful implementation of ICT in schools.

### ***Conclusion***

The use of ICTs in school education demands for a fundamental shift in content design and content delivery. New technologies cannot be imposed without enabling teachers and learners to understand the fundamental shifts in the trend. So, full-fledged ongoing training is very necessary. A large numbers of teachers have to be trained through crash courses or in-service training. Prospective teachers should undertake ICT training during pre-service programme. India has witnessed a growing number of policies to support ICT integration. Better co-ordination is needed among the different policy making bodies like government departments, SCERTs, DIETs, research organizations, other academic bodies, experts and the teachers so that the several factors that act as constraints for implementation of ICT in school education might be accounted for policy framing process. The arrival of digital technologies in schools has impacted the roles and responsibilities of school leaders in significant ways. ICT has triggered demands for systematic managerial restructuring in schools that will promote faster decision making to resolve the several issues and constraints of ICT implementation. School leaders should promote good partnership and collaboration with both the public and private sector. Resourceful leaders should explore various avenues for acquiring technological resources for the school. This study recommends managerial system in the school education should be restructured so that it will be able to take decisions on how to tackle the various issues of ICT implementation. Since ICT is new to rural areas it may be appropriate to facilitate training of teachers from grass-root level local bodies. When the teachers become interested and are capable of using ICT, only then the infrastructure up gradation would be fruitful and productive one. On the basis of the information collected in the present study it is observed that several studies have been done on ICT at school education level in different countries particularly in the developed ones. In India, such studies are conducted only in few states like Karnataka, Kerala and Gujarat. But in West Bengal it is very little. So this study recommends for more research on ICT implementation in school and especially on the perceptions of teachers related to ICT use in West Bengal.

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## Internal Efficiency and Physical Facilities in Primary Schools in Rural West Bengal : A Longitudinal Survey Study

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Nimai Chand Maiti\*\*\**

### Abstract

*An attempt has been made in this paper to study the internal efficiency and physical facilities of primary schools in rural West Bengal in three phases 1974 to 1981 (phase I), 1990-91 to 1997-98 (phase II) and 2007-08 to 2013 (phase III) and the changes occurred in physical facilities. 18 schools and their all 539 pupils enrolled in class I in 1974, 830 in 1990-91 and 786 in 2007-08 sessions are selected as sample by multi-stage stratified random sampling technique. To collect data related to physical facilities, schedule on general information of the school was used and students' admission and attendance registers (class I to IV) were also used to collect information related to internal efficiency of schools. Internal efficiency of schools was calculated using 'True Cohort Method' and for analysis of data ratio, percentage,  $\chi^2$  and Z-test were applied. It is found that in phase I, phase II, and phase III the input-output ratios were 45.67%, 75.80% and 92.06% respectively and the wastage ratios were 2.19, 1.36 and 1.09 respectively. The average duration of stay of graduates therein were 5.22, 4.51 and 4.14 years respectively. The input per graduate in phase I, phase II, phase III were 8.76, 5.42 and 4.35 years respectively but ideally it should be 4 years. The completion rate from class I to class IV in phase I, phase II, phase III were 42.12%, 67.05% and 90.71% respectively. The values of the indicators of internal efficiency together establish the clear indication of large improvement in primary education for the last four decades. It is also observed that in all classes dropout and repetition rates were significantly lower in phase II than in phase I but it is very low in phase III. It is also observed that there was a great deal of variations among the schools in pupil-teacher ratio (PTR), ranging from 16.33 to 52.67. Though physical facilities except the information and communication technology have been improved in phase III, students' enrolment has surprisingly decreased in each government aided school due to increase of private schools. Classrooms*

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*are not hygienic as there is no provision of non-teaching staff in primary school. Non-teaching staff should be appointed to make learning climate conducive.*

**Key Words :** *Internal Efficiency of Schools, Physical Facilities, Primary Education, School Education*

### ***Introduction***

Education is a critical input in human resource development and is essential for economic growth of the country. Universalisation of elementary education is the commitment of our country since independence. In 1950 Junior Basic Scheme was adopted. In 1981 the curriculum of primary education was restructured on the basis of the recommendations of Himangshu Bimal Majumder committee in West Bengal. Accordingly non-detention policy was adopted. The National Policy of Education 1986 marked significant steps in the history of education in post-independent era and after the Unnikrishnan Judgement, 1993, the 86th amendment of the constitution in December 2002, inserted a new article 21A which states that the state shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the state may, by law, determine. Article 45 also has been substituted, with the provision for early childhood care and education to children below the age of six years. Recently, as a part of national policy for development of elementary education, several centrally sponsored and state specific programmes are being carried out under the rubrics of Sarva Shiksha Abhijan (SSA). Meanwhile the Right of Children to Free and Compulsory Education Act (RTE), 2009 has been enacted. The Act also provides for a special organization, the National Commission for the Protection of Child Rights, an autonomous body set up in 2007, to monitor the implementation of the act, together with Commissions to be set up by the states.

Though, a lot of research works have been done in primary education at local, state, national and international levels i.e. yet limited studies were found covering important issues on the problems and success of the primary education in rural West Bengal ( Halder, Sil. and Maiti, 2013). Generally longitudinal studies covering a time span of several decades on the success and failure of primary education system could contribute valuable inputs for further review of policy and planning work in this area. But there is lack of this approach. The authors aim to this area. The present study covering a wide span of time period of 1974 to 2013 focused the changes the internal efficiency and physical facilities in primary schools in rural West Bengal in three phases , first phase from 1974 to 1981, second from 1990-91 to 1997-98 and third 2007-08 to 2013. Internal efficiency of schools is measured through six indicators namely (1) Input-output ratio, (2) Input per graduate (3) Wastage ratio (4) Proportion of wastage on account of dropouts and repeaters (5) Average duration of stay of Graduates, Drop out and Cohort and (6) Cohort survival and dropout rates. Number of students,

teacher and classroom, drinking water facilities, sanitation arrangement, availability of playground, availability of common teaching learning material, midday meal, free school uniform and health check up facilities were taken as physical facilities in the study.

### ***Objectives of the Study***

1. To compare the internal efficiency of primary schools in three phase 1974 to 1981, 1990-91 to 1997-98 and 2007-08 to 2013
2. To study the changes in physical facilities in primary schools in two phases 1990-91 to 1997-98 and 2007-08 to 2013.

### ***Sampling Technique and Sample Size***

Multi-stage stratified random sampling technique was adopted. 18 primary schools were selected from 6 blocks of three districts in rural West Bengal. 18 schools and its all 539 students enrolled in class I in 1974, 830 in 1990-91 and 786 in 2007-08 sessions constitute the sample. To collect data related to physical facilities available in schools schedule on general information of the school was used and Students' admission and attendance registers (class I to IV) also used to collect information related to internal efficiency of schools. The data related to physical facilities were collected in two phases 1990-91 to 1997-98 and 2007-08 to 2013 as those were not available for the period 1974 to 1981,

### ***Analysis of Data***

For quantitative analysis of data ratio, percentage, z-test and  $\chi^2$  test were applied and qualitative analysis was done on the basis of informal discussion with the assistant teachers and headmasters of the schools while collecting data. Internal efficiency of schools was calculated using 'True Cohort Method' which is more accurate method in comparison to 'Apparent Cohort Method' or 'Reconstructed Cohort Method'. In this case, enrolment in class I in a given year is considered. Mehta, A.C. (2002)

### ***Findings of the Study***

#### ***Internal Efficiency of the Primary School***

Students' flow charts for cohort I, cohort II and cohort III were constructed for phase I, phase II and phase III respectively to calculate the six indicators of internal efficiency of school.

**Student flow chart for cohort I in phase I, Cohort II in phase II and cohort III in phase III**

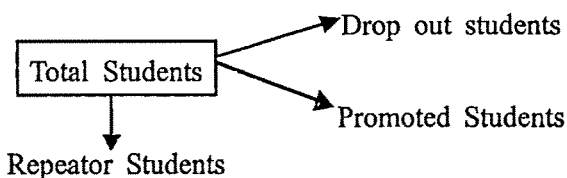
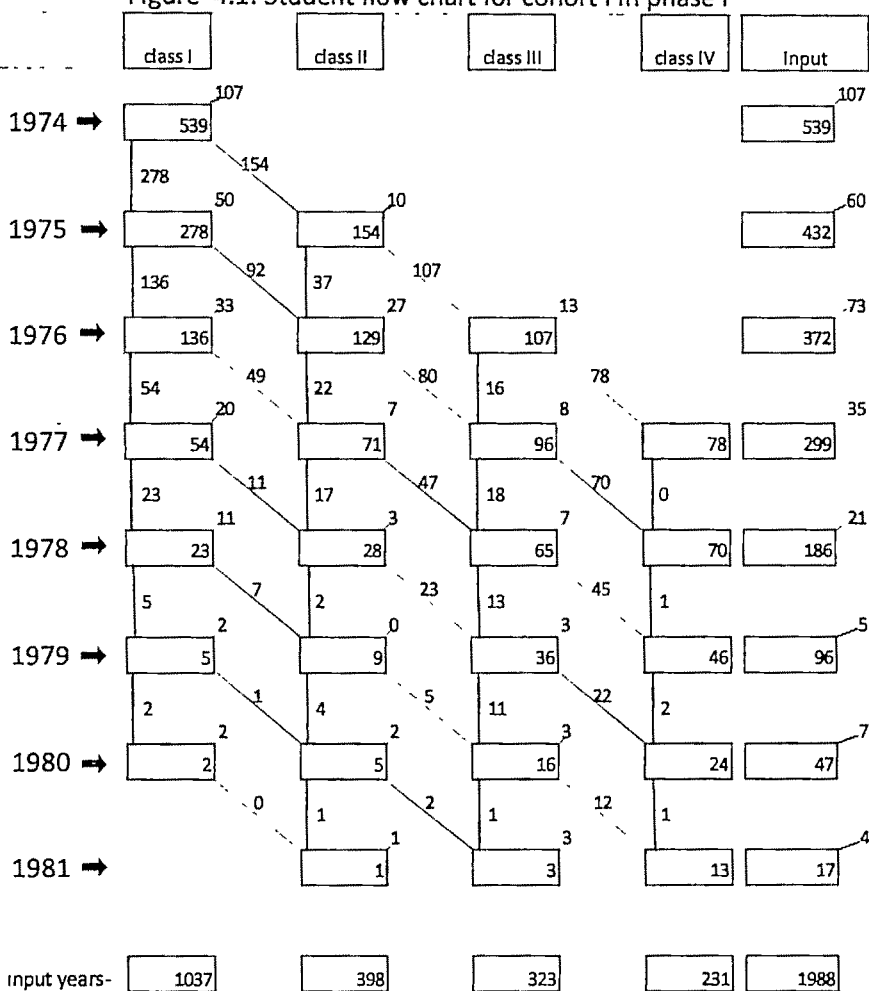


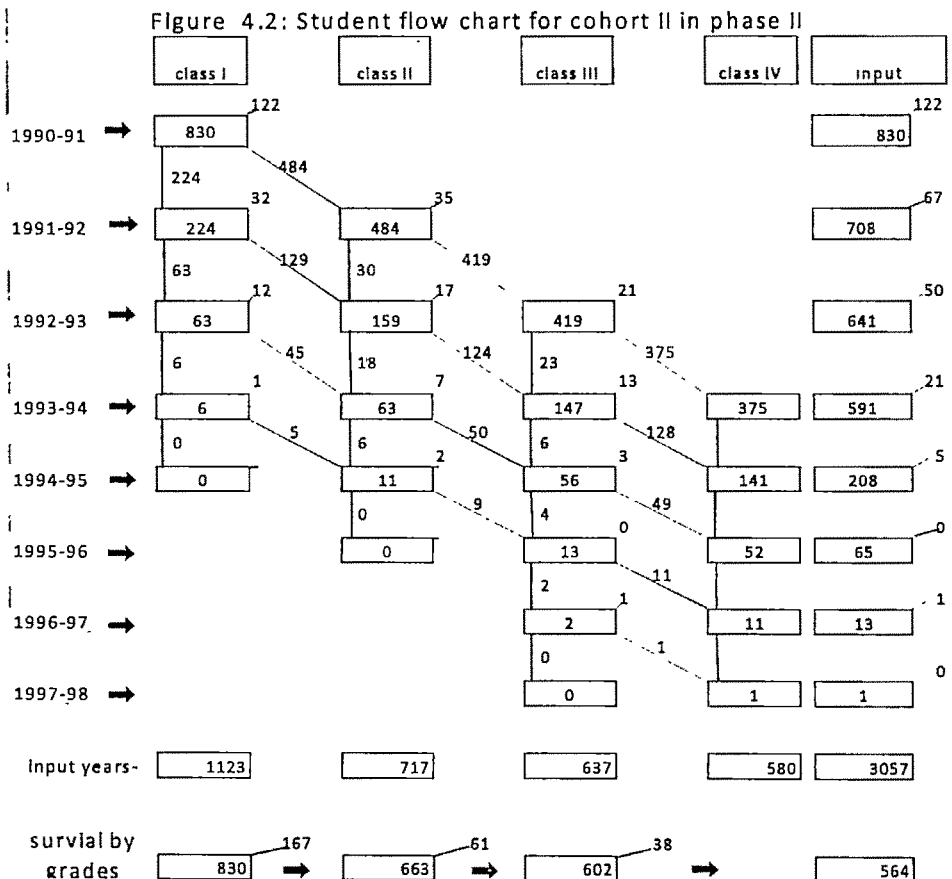
Figure 4.1: Student flow chart for cohort I in phase I



Cohort 1 shows the 539 students who were admitted to class I in 1974 and their position in subsequent years. It was observed that in the 1st phase out of 539 students enrolled in class I in 1974, 278 (51.58%) were detained in the same class, 154 were promoted to class II and 107 (19.85%) dropped out before arriving class II in 1975. Again, out of 278 detained in 1975, 136 (48.92%) were detained, 92 promoted to class II, 50 dropped out before arriving class II in 1976. Again, out of 136 detained in class I in 1976, 54 students were again detained, 11 promoted to class II and 20 dropped out before arriving class II in 1978. Again out of 54 students detained in 1977 in class I, 11 students were promoted to class II, 20 students were dropped out. In this way, out of 539 students enrolled, 225(107+50+33+20+11+2+2) were dropped out before arriving class II in subsequent years mentioned above, i.e. the rate of drop out

in class I (before arriving class II) was 41.74% and in total 314 (674+56+13+1) were promoted to class II. Again, out of these 314 students promoted to class II, 10 were dropped out before arriving in class III in 1975, 27 in 1976, 7 in 1977, 3 in 1978, 0 in 1979, 2 in 1980 and 1 in 1981. Thus, out of 314 students promoted 50 (10+27+7+3+0+2+1) students dropped out before arriving class II i.e. the rate of drop out in class II was 15.92 % and in total 264 students were promoted to class III (107 students in 1976, 80 in 1977, 47 in 1978 and 23 in 1979, 5 in 1980 and 2 in 1981). Out of these 264 students, total 37 students (13 in 1976, 8 in 1977, 7 in 1978, 3 in 1979, 3 in 1980 and 3 in 1981) were dropped out before arriving class IV i.e. the rate of drop out in class III (before arriving class IV) was 10.17%.

Thus, out of 539 enrolled students in class I in the academic session 1974, 225 dropped out before arriving class II, other 50 students before arriving class III and another 37 dropped out before arriving class IV i.e. the total drop out

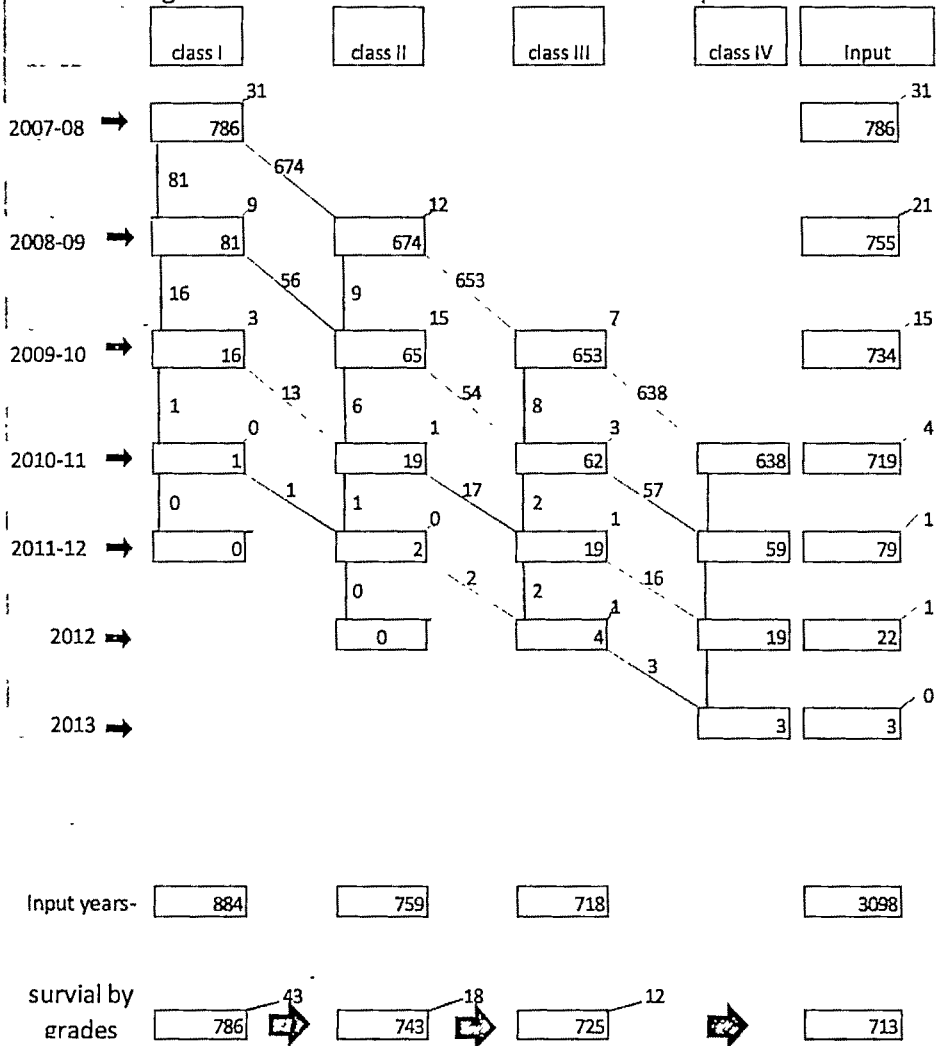


students in different classes (Class I-IV) in subsequent academic years (2007-08 to 2011-12) of primary education was 312 (225+50+37) students. Therefore, in the 1st phase the rate of drop out at primary stage of education was 57.89%.

Cohort 2 shows that out of 830 students who were admitted to class I in 1990-91 and their position in subsequent years. It was observed that in the 2nd phase out of 830 students enrolled in class I in 1990-91, 224 (26.99%) were detained in the same class, 484 were promoted to class II and 122 (14.69%) dropped out before arriving class II in 1991-92. Again, out of 224 detained in 1991-92, 63 (28.13%) were detained, 129 promoted to class II, 32 dropped out before arriving class II in 1992-93. Again, out of 63 detained in class I in 1992-93, 6 students were again detained, 45 promoted to class II and 12 dropped out before arriving class II in 1993-94. Again out of 6 detained in 2010-11 in class I, 5 were promoted to class II, the remaining 1 student was dropped out. Thus, out of 830 students enrolled, 167 (122+32+12+1) students were dropped out before arriving class II in subsequent years mentioned above, i.e. the rate of drop out in class I (before arriving class II) was 20.12% and in total 663 (484+129+45+5) students were promoted to class II. Again, out of these 663 students promoted to class II, 61 were dropped out before arriving in class III (35 in 1991-92, 17 in 1992-93, 7 in 1992-93 and 2 dropped out in 1994-95). Thus, out of 663 promoted students 61(35+17+7+2) dropped out before arriving class II i.e. the rate of drop out in class II was 9.20% and altogether 602 students were promoted to class III (419 students in 1992-93, 124 in 1993-94, 50 in 1994-95 and 9 in 1995-96). Out of these 602 students, 38 students (21 in 1992-93, 13 in 1993-94, 3 in 1994-95, 0 in 1995-96 and 1 in 1996-97) were dropped out before arriving class IV i.e. the rate of drop out in class III (before arriving class IV) was 6.31%.

Thus, out of 830 students enrolled in class I in the academic session 1990-91, 167 dropped out before arriving class II, other 61 students before arriving class III and another 38 dropped out before arriving class IV i.e. the total drop out students in different classes (Class I-IV) in subsequent academic years (1990-91 to 1995-96) of primary education was 266 (167+61+38) students. Therefore, in the 2nd phase the rate of drop out at primary stage of education was 32.05%.

Figure 4.3: Student flow chart for cohort III in phase III



Cohort 3 shows the 786 students who were admitted to class I in 2007-08 and their position in subsequent years. It was observed that in the 3rd phase out of 786 students enrolled in class I in 2007-08, 81 (10.31%) were detained in the same class, 674 were promoted to class II and 31 (3.94%) dropped out before arriving class II in 2008-09. Again, out of 81 detained in 2008-09, 16 (19.75%) were detained, 56 promoted to class II, 9 dropped out before arriving class II in 2010-11. Again, out of 16 detained in class I, 1 student in 2009-10 was again detained, 13 promoted to class II and 3 dropped out before arriving class II in 2010-11. Again, out of 1 student detained in 2010-11 in class I, was promoted to class II; obviously no student was dropped out. Thus, out of 786 students enrolled, 43 (31+9+3) students were dropped out before arriving class

II in subsequent years mentioned above, i.e. the rate of drop out in class I (before arriving class II) was 5.47% and in total 743 (674+56+12+1) were promoted to class II. Again, out of these 743 students promoted to class II, 12 were dropped out before arriving in class III in 2008-09, 5 in 2009-10, 1 in 2010-2011 and not a single student dropped out in 2011. Thus, out of 743 promoted students 18 (12+5+1+0) dropped out before arriving class II i.e. the rate of drop out in class II was 2.42% and in total 725 students were promoted to class III (653 students in 2010-11, 54 in 2010-11, 16 in 2011 and 2 in 2012). Out of these 725 students, 12 students (7 in 2009-10, 3 in 2010-11, 1 in 2011 and 1 in 2012) were dropped out before arriving class IV i.e. the rate of drop out in class III (before arriving class IV) was 1.66%.

Thus, out of 786 students enrolled in class I in the academic session 2007-08, 43 dropped out before arriving class II, other 18 students before arriving class III and another 12 dropped out before arriving class IV i.e. the total drop out students in different classes (Class I-IV) in subsequent academic years (2007-08 to 2011-12) of primary education was 73 (43+18+12) students. Therefore, in the 3rd phase the rate of drop out at primary stage of education was 9.29%.

**Table 1 : Indicators of internal efficiency in three phases**

Indicators	Phase I	Phase II	Phase III
Input output ratio in %	45.67	73.90	92.06
Input per Graduate in years	8.76	5.42	4.35
Wastage in %	54.33	26.20	8.05
Wastage Ratio	2.19	1.36	1.09
Average duration of stay of Graduates	5.22	4.51	4.14
Cohort Survival Rates(Class I to Class II) in %	58.26	79.88	94.53
Cohort Dropout Rates(Class I to Class II) in %	41.74	20.12	5.76
Cohort Survival Rates(Class II to Class III) in %	84.08	90.80	97.58
Cohort Dropout Rates(Class II to Class III) in %	15.92	9.20	2.42
Cohort Survival Rates(Class III to Class IV) in %	85.98	93.69	98.34
Cohort Dropout Rates(Class III to Class IV) in %	14.02	6.31	1.66

The study found that all the indicators of internal efficiency have been improved gradually (Table 1). It is revealed that there is a huge improvement in input-output ratios. The input-output ratios in phase I, phase II, phase III were 45.67%, 75.80% and 92.06% respectively. Here input denotes the product of number

of students and their respective duration of staying in year i.e. total invested 'student years' and similarly output denotes the product of number of primary graduate students and their four years duration of staying in year i.e. total invested 'student years'

In phase I, phase II, phase III the wastage in years were 54.33%, 26.20% and 8.05% respectively. The wastage ratios therein were 2.19, 1.36 and 1.09 respectively. So there is a sharp declination in wastage ratios.

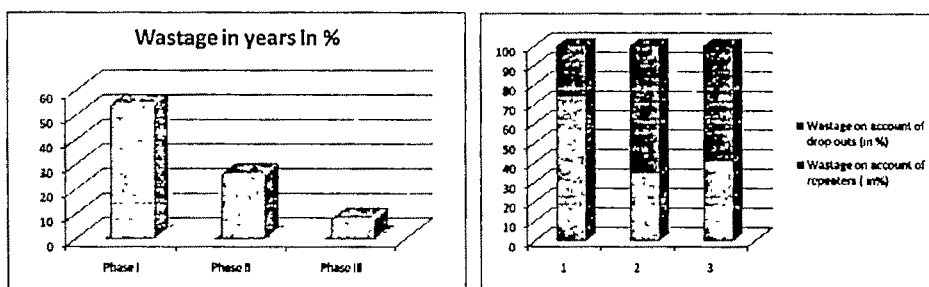


Figure 1 : Proportion of wastage on account of dropouts and repeaters

It is found from the study that wastage on account of repeaters was higher than wastage on account of dropouts in phase I i.e. before adoption of non-detention policy (1981). The phase II shows that repetition has been sharply decreased in comparison to dropouts so wastage on account of drop outs is very high in comparison to wastage on account of repeaters. In phase III, wastage on account of drop outs had decreased in comparison to phase II. The first figure indicates that the dropout rate has been decreasing over the years.

It is found that in phase I, phase II, phase III, average duration of stay of graduates were 5.22 years, 4.51 years and 4.14 years respectively and average duration of stay of cohort were 2.30 3.70 years and 2.54 years respectively. It is seen from the data that average duration of stay of cohort in phase II was considerably increased. From the analysis it is found out that the result is quite obvious because dropout rate was very high in phase I. It made the average duration of stay of cohort shorter. In phase II, dropout rate was decreased but the repetition was still exists, these two factors made average duration of stay of cohort longer. But in phase III, both dropout and repetition had decreased considerably. As a result, the average duration of stay of cohort in phase III had been decreased. It is also revealed that the cohort survival rate between the classes has been increased highly which indicates the improvement. It is to be noted that cohort survival rate between the classes in phase III is above 94% in all classes. The completion rate in percentage from class I to class IV in phase III is above 90% which denotes a success but still away from 100% goal (Figure 2).

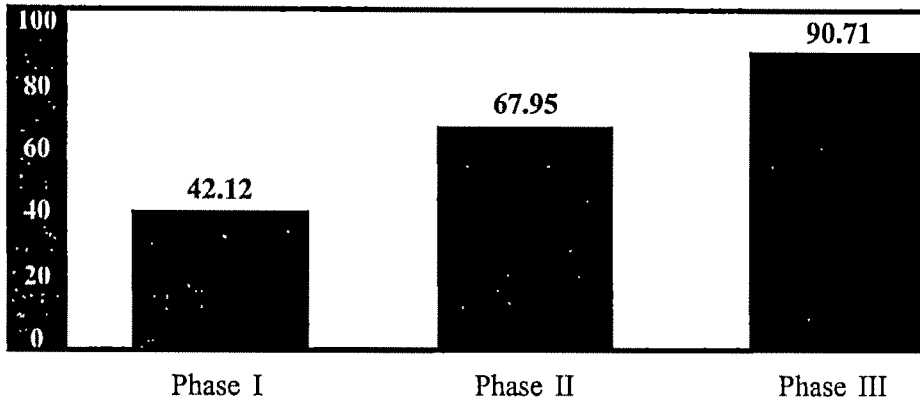


Figure 2 : Completion rates (in %) from class I to class IV in three phases

It is to be observed that in phase III the repetition rate in each class of primary education is very low in comparison to phase I and phase II. In 3rd phase the repetition rates (class I-10.31%, class II-2.15%, class III-1.65%, and class IV-0.70%) are very low in comparison to earlier phases. But it is interesting to note that even after 40 years of adoption of non detention policy; repetition is prevailing in the system. It is seen that the repetition rate in class I is high (10.31%) even in third phase. From analysis it is found that 'School Cholo Kormosuchi' (total enrolment drive) has been organized every year under SSA to admit each child with appropriate age to be admitted in class I. In West Bengal up to 2011 the age was 5 years for admission in class I but it became 6 years from 2012 and onwards. In that total enrolment drive programme, all the children of appropriate age group were indentified and made them admitted in primary school. But a portion of those students did not go to the schools at all or was highly irregular. Those students could not even take part in periodical and final evaluation process. As the result, despite of non detention policy, those students could not be promoted in class II. They are out of school children in true sense. But finding no alternative Headmaster of the school kept their names in attendance register in same class at least for further one year. This phenomenon made the repetition rate high in class I even in phase III. Hence daily attendance and participation in evaluation process are to be ensured. (Annual report of 2010-11 of Paschim Bangya Sarva Shiksha Mission). As per that report, the overall repetition rate in four year primary cycle of the state is 24.39%, where as 23.37% in Mursidabad and 26.43% in South 24 Parganas district. Thus, the rates of repetition in different classes have been significantly decreased gradually in 1st, 2nd and 3rd phase (table 2). It is very low in comparison to 2nd and 3rd phase. It is to be noted that in phase III the rate is very low in comparison to earlier phases which is desirable. It is also found that even after 40 years of adoption of non-detention policy repetition is prevailing

in the system though there are no significant differences in repetition between the boys and girls.

**Table 2 : Z value for comparison of repetition in three phases**

Classes	Phases	Total number of student	Number of repeaters	Proportion	Z values
Class I	Phase I	539	278	0.5158	9.22*
	Phase II	830	224	0.2699	
	Phase II	830	224	0.2699	8.51*
	Phase III	786	81	0.1031	
Class II	Phase I	314	76	0.2430	7.26*
	Phase II	663	50	0.0754	
	Phase II	663	50	0.0754	4.81*
	Phase III	743	16	0.0215	
Class III	Phase I	264	54	0.2045	6.22*
	Phase II	602	34	0.0565	
	Phase II	602	34	0.0565	4.56*
	Phase III	725	12	0.0165	
Class IV	Phase I	227	4	0.0176	0.74
	Phase II	564	15	0.0266	
	Phase II	564	15	0.0266	2.78*
	Phase III	713	5	0.0070	

$Z_{.005} = 1.64$

\*Significant

It appears that in earlier two phases the rate of dropout in class I was high (1st phase 41.74%, phase-20.12%) but it is considerably low in third phase-6.74%. But it is still a problem. With eight million children never having stepped inside a school and 80 million dropping out without completing basic schooling, the United Nations Children's Fund has described the situation as a national emergency and called for equipping the government and civil society to implement the Right of Children to Free and Compulsory Education Act, 2009. An enormous number of international, national and area specific studies have been done to find out the causes of dropout. These causes are still prevalent. No doubt these findings are important but from the experience it is felt that the measures taken from these findings are more important without further delay. The earlier studies (National Literacy Mission, 1999; Aggrawal, 2001; Chattopadhyay, 2003; NCERT, 2003; Sundar, 2005; Dudhe 2008 and Sil, Halder, and Maiti. 2013) found that poverty, illiteracy, lack of motivation among children, learning difficulties, child labour, corporal punishment, teachers

attitude, lack of co-curricular activities, formal and traditional way of teaching, school environment, lack of basic physical facilities, lack of monitoring and accountability are the major causes for dropout. Recent studies found out that migrations have become vital causes of dropout. Available estimates suggest that there are approximately 15 million child migrants in India (Daniel, 2011; Smita, 2011). Seasonal migration has long been a practice for improving livelihoods in rural areas, with some male members of the family leaving the village for part of the year to look for paid work. In the last few decades, however, there has been growing incidence of 'distress seasonal migration'. This occurs due to the lack of livelihood options after the harvest of the monsoon crop (kharif) in most rain fed parts of the country, which gives rise to indebtedness and food insecurity. This forces the entire family to leave home in search of work in order to survive. Persistent drought and environmental degradation have led to the escalation of this trend. Children, who have no choice but to accompany their parents, dropout of schools and are forced into hard labour. There are also a number of pull factors for distress migration, including the high seasonal demand for manual labour in agriculturally rich areas and labour intensive industries. In West Bengal, this type of migration occurs from districts of western part like Purulia, Bankura and Jhargram Subdivision of Paschim Medinipur to Burdwan, Hoogly and other districts of Gangatic West Bengal (PBSSM Report on Migration, 2010). The mobility factor of these families has also been recognized, and it is now a requirement for administrations in both sending and receiving areas to work together to ensure schooling of migrant children. Poor people from adjoining states flock to Kolkata slum in search of employment. These families have general tendency to go to their native villages at regular interval with their families. This results in irregular attendance and long absentees and ultimately dropout. (Nath, 2010). Even School academic year is not in synchronization with migratory seasons. One of the objectives of SSA ensures that every Child with Special Needs (CWSN), irrespective of the kind, category and degree of disability, is provided meaningful and quality education. Hence, SSA has adopted a zero rejection policy. This means that no child having special needs (disable) should be deprived of the right to education and taught in an environment, which is best suited to his/her learning needs. The percentage of CWSN identified being only 1.44% of the total child population from DISE 2009. But in Census 2001, 2.1% of the total population has been found to have some disability. In West Bengal, SSA identified 219075 number of CWSN, out of which 133662 number were enrolled in schools in 2009-10 (Annual Report 2010-11). It is observed in the present study that this disability is also a cause of dropout and CWSN are most venerable for dropping out.

***Physical Facilities Available in School***

Available physical facilities are now a major dimension of quality education. National Education Policy, 1986, three tiers Panchyatiraj, MLA & MP LAD (Local Area Development) Fund have also provision for development of physical facilities. SSA has also given huge emphasis on it. It is found that there is significant improvement of infrastructure in schools in post SSA period.

**Table 3 :  $\chi^2$  for comparison of infrastructure between pre SSA and post SSA period**

Available Infrastructure	Number of Schools	
	Post SSA Period	Pre SSA Period
Own Building	18 (100)	18 (100)
Entire Kuchha Building	0 (0)	5 (27.78)
Kuchha pucca Building	12 (66.67)	11 (61.11)
Entire Pucca Building	6 (33.33)	2 (11.11)
Drinking Water	18 (100)	14 (77.78)
Sanitation (toilet)	18 (100)	5 (27.78)
Electricity	13 (72.22)	2 (11.11)
Bench/desk for student	4 (22.22)	3 (16.67)
Blackboard in classrooms	18 (100)	18 (100)
Commonly used TLM	18 (100)	10 (55.56)
Playground	16 (88.89)	16 (88.89)
Library used	2 (11.11)	0 (0)
Separate office room	7 (38.89)	2 (11.11)
Separate staff room	2 (11.11)	1 (5.56)
$\chi^2$	32.98*	

Percentages are given in the brackets  $\chi^2$  0.01,13 =27.688

\*Significant

For the comparison of infrastructure in schools between pre SSA and post SSA period,  $\chi^2$ -test was done and is shown in Table 3. It is observed from the table that all the schools have their own school building, there is no school with solely kuchha building. All the schools have drinking water arrangement, sanitation arrangement, and commonly used teaching-learning materials. It is an indication of considerable amount of improvement in infrastructure in schools in post SSA period. Scenario of physical facilities in post (phase III) and pre SSA period (phase II) in 18 schools are shown in table 4 and it is found that in SSA period, in all dimensions, there is a huge improvement in physical facilities except health check up matter.

**Table 4 : Availabilities of physical facilities in post (phase III) and pre SSA period (phase II) in 18 schools**

Physical Facilities	Phase III	Phase II	Remarks
Total number classroom	90	66	Improvement
Total number of student	2502	5206	Decreased in post SSA period
Total number of teacher	80	78	Decreased in post SSA period
Pupil teacher ratio (PTR)	31.28	66.74	Improvement
Student class-room ratio(SCR)	27.80	78.89	Improvement
Availability of Common TLM	100	100	No considerable change.
Having playground	16 (88.89%)	16 (88.89%)	No considerable change.
Supply of textbooks	18 (100)	18 (100)	Improvement, in terms of time of availability and adequate numbers has been improved.
Midday Meal	100% cooked food	Only 3 kg rice per month	Though there were still problems regarding regularity but there is a radical change.
Free School Uniform	Two sets of uniform for all girls, SC, ST and BPL boys from SSA.	Only one set for SC, ST boys and girls	large improvement
Health check up	No system of health check up	Health card was issued after one time health check up without any follow up	Lack in both phases. Need improvement

But improvements of all dimensions are uneven. There are school to school huge variations. In post SSA period there is a great deal of variations among the schools in PTR also, ranging from 16.33 to 52.67. Most of the schools (15 of 18 schools) have PTR less than 40. Only one school has PTR more than 50 (52.67) and two schools have PTR more than 40 (45.43 and 41.50). In 1995-96, i.e. in pre SSA period the PTR in those schools varies from 31.50 to 214. That variation was huge. In pre and post SSA period it is 66.64 and 31.28 respectively. So there is a large amount of improvement in PTR in SSA period. But on the other hand, enrolment has been largely decreased in schools (Table5).

**Table 5 : School-wise comparison of the number of teacher and student and their ratio between post and pre SSA period**

School No	Total Student		Total Teacher		Pupil Teacher Ratio (PTR)	
	Pre SSA	Post SSA	Pre SSA	Post SSA	Pre SSA	Post SSA
S-1	723	316	12	6	60.25	52.67
S-2	333	145	5	4	66.60	36.25
S-3	244	191	4	5	61.00	31.83
S-4	227	128	4	4	56.75	32.00
S-5	214	49	1	3	214.00	16.33
S-6	255	65	5	3	51.00	21.67
S-7	104	97	3	4	34.67	24.35
S-8	146	62	3	2	48.66	31.00
S-9	251	76	5	4	50.20	19.00
S-10	131	111	2	6	65.50	18.50
S-11	467	131	5	4	93.40	32.75
S-12	381	220	4	7	95.25	31.43
S-13	116	96	2	4	58.00	24.00
S-14	126	89	4	4	31.50	22.25
S-15	206	139	3	6	68.67	23.16
S-16	552	318	7	7	78.86	45.43
S-17	201	166	4	4	50.25	41.50
S-18	529	103	5	3	105.80	34.33
<b>Total</b>	<b>5206</b>	<b>2502</b>	<b>78</b>	<b>80</b>	<b>66.74</b>	<b>31.28</b>

In recent time, these schools are getting students with comparatively lower socio economic background. There is a perception of common people that a private primary school is better in quality than a government primary school. So the students with comparatively better socio economic background are coming to private primary schools. It is observed that in the year 1997, one school (S-1) had 12 teachers and separate classroom for each section of four classes of class I, II, III and IV for the total 723 students and most of the teachers lived in surrounding of the school, within 2 or 3 Km distance from the school. In earlier times, most of the teachers being local were exceptionally exposed to the individual guardians /local people. So students and their guardians were familiar with them. Meetings of guardians and teachers were not confined within the formal parents- teachers or Village Education Committee meeting. Informally teachers met day-to-day even in the market place, roadside and yards. Detailed information was collected from former and present teachers of the school through interview. An ex-teacher claimed that we asked father of absent student why your child didn't come to school (Aamader samaye bikale rastay babar sathe dekha hale giggyasa kortam, tomar chheleke skule pathailen na kyano?) while meeting at the roadside at afternoon, after school hour. Teachers could not only ensure daily attendance of students but also took care individually of all students. He also claimed that their school was big school in this area but now people did not interested to admit their children to the school. He opined 'eta ekhan Gariber School' i.e. the school is for poor children only. In that way this school is getting student from disadvantaged group through indirect screening. This may somehow generate less competitiveness among the students as well as less motivation among the teachers. On the otherhand, guardian opined 'skule lekha para hai na, masterra khichuri khaiye chhere dyay' i.e. teachers do not take classes, they declare close the school after providing midday meal item. Teachers have to remain themselves in the arrangement, preparation and distribution of midday meal. It is fact that in recent times common people are interested to send their children in Private School as their good perception about these schools and lack of facility of government aided pre primary education in this rural area. So, not only the upper middle class and middle class people but also comparatively economically stable families in the locality admitted their children at two Private English Medium Schools which have been established in the last decade within 1 km radius of this school. Now government aided school is designated as Gariber (Poor) School. The Government aided school has not only lost the faith of common people but is dishonored by the teacher of this type of school. One who is a teacher in Government aided school does not admit his/her child to own school. As a result the number of student has been decreased from 723 in 1997 to 316 in 2012. In South 24 Pgs district, school

number S-4, there is only 5 students out of 14 were present in class IV and it is 8 out of only in school number S-6. The picture is the same in other classes also.

In addition, the physical environments of these schools are dirty, uncleaned and unhygienic. Even the schools are running without regular sweeping and unhygienic sanitary arrangement. There is no provision of sweeper or any other group D staff. According to the opinion of the teachers, students are not ready to the sweeping like earlier days. Guardians are in strong opinion that his/her ward is not going to school for sweeping or other work of sanitation. So they are discouraging these. Teachers do not dare to make the student to do these works at the present socio-political situation. So teachers are in the opinion that there should be the provision of sweeper and group D staff in primary schools. Moreover there is an affinity or craze (it may be created by media and expectation to ensure lucrative job in market) towards English Medium school among the upper middleclass and middle class. So the students with comparatively better socio economic background are coming to private primary schools. In that way these schools are getting students from disadvantaged group through indirect screening.

It is also seen from the study that there is a school with two teachers only. During the visit, the researcher found that in that two-teacher school, one teacher is on leave and another teacher is fully engaged in voter enumeration work, the teaching-learning process is totally collapsed. Parent opined that for this reason only many children left the school and took admission in a private school. Automatically the student strength of that school has been decreasing and as a result the teacher entitlement according to student strength of that school may not be increased beyond two as per SSA norms. RTE Act also links the number of teachers with the student enrolment with the minimum provision of two teachers. So, only two teachers in primary schools may not be sufficient. But it was also experienced that it is not possible to run four classes properly with two teachers, as new methodologies like activity based learning, peer group learning, cooperative and collaborative learning could not be practiced properly without one dedicated teacher for each class. Moreover, there are practices of deployment of teacher in non-academic activities and personal leave of the teacher. So, the findings of the study cannot support this provision of RTE and recommends for at least four teachers for four classes.

All sample schools have been getting free textbooks from state budget as that has been borne by state before SSA period. According to norms of SSA, it does not fund for the schemes which has been started before SSA and that has

to be continued by state fund. All schools have been getting school grant at the rate of Rs 2000 per year and at the rate of Rs 500 per teacher per year for TLM (Teaching Learning Material) grant as per norms of SSA. There is a provision of maintenance grant at the rate of Rs 5000 per year per school. But only 22.22% schools have got it almost regularly but it had not been available to rest 77.78% in last 2/3 years. The teachers are also getting in-service training for 5/6 days per year in a sporadic manner though there is provision of 20 days teachers' training as per norms of SSA. But it is surprising to note that there is no effective follow up system for which expected results are not reflected in teaching learning process. Teachers gave their valuable opinion regarding different aspects of in-service training. Trainings are not need based. Trainings must be according to need of the teachers, not according to the sweet will of the State authority. There must be bottom up approach instead of top down approach. So need assessment studies are to be conducted from time to time with a view to developing suitable training design. Training programmes must be conducted by well equipped and skilled persons in the concerned subject or else these are useless. In rural areas, two teachers are working in schools. The learning of students is affected adversely by in-service trainings of teachers. Training programmes are conducted in working days. This reduces the teaching hours in schools. Therefore, training should not be conducted during working days. School based training programmes need to be launched. Some training programmes may be arranged in holiday or summer vacation. Resource persons should take personal interest in order to make their interaction well and meaningful. There should be new things in training programmes like attractive methods of teaching, so entry behaviour of teachers must be considered while developing training design. What they are learning in the training programme is not possible to use in the school situation. Training must be contextual and easily applicable. Overall a strong onsite monitoring and support system must be there for effective follow up.

It is revealed that in post SSA period most of the schools (94.44%) have separate classrooms. One school (5.56%) has three classrooms and it has one big hall where two classes are accommodated. Therefore, the accommodation is not a problem in the schools now and there is much improvement with respect to number of classrooms in phase III. But hygienic aspects in schools are neglected. As there is no nonteaching staff maintenance of accounts and records as per requirement of higher administration keeps engage the teachers busy which may reduce the teaching learning hour. System of maintenance of accounts and records should be simplified. Though community initiatives are vital to strengthen implementation, responsibility lies entirely on headmaster

of schools. Teachers told that they are almost engaged throughout the year for continuous comprehensive evaluation and as such in service teachers training but those in service trainings programme are not effective at all. It appears that the ongoing evaluation system is nothing but fragmented and scaled down examination more or less though it is termed as continuous comprehensive evaluation. The evaluation system needs changes.

### **Conclusion**

Physical facilities and internal efficiency of schools have been increased though the problems of repetition and dropout are still in schools. CWSN are most venerable for dropping out. The physical environments of the schools are dirty, unclean and unhygienic. Though physical facilities except the information and communication technology have been improved in phase III, students' enrolment has surprisingly decreased in each government aided school due to increase of private schools. Classrooms are not hygienic as there is no provision of non-teaching staff in primary school. It is revealed from the opinion of the teachers that the State and Union government allotted fund as grants for different civil works but both the government are not providing sufficient fund for flexible sitting arrangement and to develop classroom for information and communication technology as per modern pedagogy. So the study recommends that non-teaching staff should be appointed to make school climate conducive for learning and sitting arrangement should be flexible in classroom for peer learning and information and communication technology should be facilitated as per modern pedagogy.

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## Job Satisfaction of Secondary School Teachers

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*Dulal Mukhopadhyaya\* and Uday Sankar Kabiraj\*\**

### Abstract

*The teacher occupies a very important role in the educational process. However now a days, there is a general feeling that teachers do not have satisfaction in their job, as a result of which the standard of education is decreasing day to day. The present study aimed at studying the job satisfaction of secondary teachers. Six hundred and forty secondary teachers, both trainee and trained, including male/female and urban/rural teachers of WB were selected as the sample. A standardized job satisfaction scale for secondary schoolteachers was used as a measuring tool. The result of the study showed that there was no significant difference between the trainee and trained teachers, and between male trainee and female trainee teachers. But there was a significant difference between the urban trainee and rural trainee, urban trained and rural trained, male trained and female trained teachers in respect of their job satisfaction.*

**Key Words :** Job satisfaction, Trainee teachers, Secondary School Teachers

### Introduction

The teachers have always been respected in the human society by all because they have contributed a lot in the process of culture building and development of human civilization. They have been doing the noble work of upbringing the Youngsters by educating them in all spheres of life. Naturally the teaching profession was ever considered a noble profession from ancient times. Now because of the scientific revolution, consequent industrial development, urbanization, modernization, decrease in child mortality and also emergence of democratic political structure, the education of the young got a boost. The demographic explosion has also changed the social scenario of the world. Everybody has the right to education. For this reason, number of educational institutions like schools, industrial institutes, polytechnics and colleges and universities has increased enormously. This requires a large number of teachers. As there has been a wide expansion in education, the fall in the standard of teaching profession cannot be ruled out.

The teacher occupies a very important role in the educational process.

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National policy on Education (1986) rightly states “No people can rise above the level of its teachers.” Effective teachers are required in the classroom because even the best curriculum and most perfect syllabus remain ineffective in the absence of a good teacher. The teacher shares the parent’s responsibilities and joy of direct involvement in promoting the healthy and balanced mental and moral life of children. So, teachers should also be learners like students. Again now a day, there is however, a general feeling that the teachers do not have satisfaction in their job, as a result of which the standard of education is falling day to day. Normally, the satisfaction in doing some work successfully and getting satisfaction is called job satisfaction. In case of teaching in educational institutions, when a teacher thinks of job satisfaction, he / she requires to acquire some standard with which he/she can proceed with this assessment. It is also clear that, teachers should have positive job satisfaction. Very naturally, a good and successful teacher would be one who happily teaches students and guides them with full satisfaction of mind.

### ***Objectives of the Study***

1. To measure the job satisfaction of trainee and trained teachers at the secondary level, of education.
2. To compare the urban and rural trainee secondary school teachers with respect to their job satisfaction.
3. To compare male and female trainee secondary school teachers with respect to their job satisfaction.
4. To compare the urban and rural trained secondary school teachers with respect to their job satisfaction.
5. To compare male and female trained secondary school teachers with respect to their job satisfaction.

### ***Hypotheses***

The following hypotheses were formulated for investigation considering the above objectives.

- $H_{01}$  : There would be no significant mean difference in job satisfaction between trainee and trained teachers.
- $H_{02}$  : There would be no significant mean difference in job satisfaction between urban trainee and rural trainee teachers.
- $H_{03}$  : There would be no significant mean difference in job satisfaction between male trainee and female trainee teachers.
- $H_{04}$  : There would be no significant mean difference in job satisfaction between urban trained and rural trained teachers.
- $H_{05}$  : There would be no significant mean difference in job satisfaction between male trained and female trained teachers.

**Methodology****Sample**

For this study a sample of 640 secondary school teachers working at Government and Government Aided schools under W.B.B.S.E were selected. The trainees were selected from B.Ed colleges of West Bengal which were either Government or Government Aided colleges recognized by N.C.T.E. Trained teachers were selected from secondary school of different districts of West Bengal. The sample was as follows:

**Table 1 : Sample size in different group**

Trained Teachers				Trainee Teachers				Total
Male		Female		Male		Female		
Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	
76	74	73	62	94	116	76	69	640

**Tool Used**

A standardized job satisfaction scale for secondary school teachers developed by Mukhopadhyaya-Kabiraj, was used for the collection of data. The scale consisted of 60 items under 10 dimensions. Dimensions considered for the Job satisfaction scale were:

- i) Student's Role (D-1)
- ii) Parental Involvement(D-2)
- iii) Social Recognition (D-3)
- iv) Economic Status (D-4)
- v) School Administration (D-5)
- vi) Infrastructure (D-6)
- vii) Teachers' Responsibility (D-7)
- viii) Academic Freedom (D-8)
- ix) Teaching Climate (D-9)
- x) Teacher's Motivations (D-10)

It was a Likert type scale with 5 alternative responses. The teachers were requested to choose any one out of five given options:

- i) Strongly agree,
- ii) Agree,
- iii) Undecided

iv) Disagree

v) Strongly disagree

The statements were of both positive and negative nature. In case of positive statements each carried a weightage of 0 to +4 and vice-versa in case of negative statement. The Test-retest reliability of the test was 0.831 and the construct validity was found to be satisfactory.

### **Result**

Determination of significance of Difference in Mean Job Satisfaction scores between Trainee and Trained Teachers.

The null hypothesis  $H_01$  was that there would be no significant mean difference in job satisfaction between trainee and trained teachers. The t-test value was found as shown in Table 2.

**Table 2 : t' test value of Job satisfaction between Trainee Trained**

Job Satisfaction	N	Mean	SD	SEm	df	t
Trainee	355	136.14	29.69	1.58	638	0.02
Trained	285	136.19	32.88	1.95		

t-value insignificant at 0.05 level

The 't' value was found to be insignificant at 0.05 level, therefore the corresponding null hypothesis ( $H_01$ ) was retained. So, it could be inferred that there existed no significant difference in the job satisfaction between trainee and trained teachers.

### ***Determination of Significance of Difference in Mean Job Satisfaction Scores between Urban Trainee and Rural Trainee Teachers***

The null hypothesis  $H_02$  was that there would be no significant mean difference in job satisfaction between urban trainee and rural trainee teachers. The t-test value was shown in Table 3.

**Table 3 : 't' test for Job Satisfaction between Urban Trainee and Rural Trainee Teachers**

Job Satisfaction	N	Mean	SD	SEm	df	t
Urban Trainee	170	139.47	30.08	2.31	353	2.04*
Rural Trainee	185	133.08	28.99	2.13		

\* Significant at 0.05 level

The 't' value was found to be significant at 0.05 level. Therefore, the corresponding null hypothesis was rejected. So, it could be inferred that there existed a significant difference in the job satisfaction between urban trainee and rural trainee teachers.

***Determination of Significance of Difference in Mean Job Satisfaction Scores between Male Trainee and Female Trainee Teachers***

The null hypothesis  $H_3$  was that there would be no significant mean difference in job satisfaction between male trainee and female trainee teachers. The 't' test value was shown in Table 4.

**Table 4 : 't' test: Job Satisfaction between Male Trainee and Female Trainee Teachers**

Job Satisfaction	N	Mean	SD	SEm	df	t
Male Trainee	210	134.93	29.27	2.02	353	0.92
Female Trainee	145	137.89	30.20	2.51		

The 't' value was found not to be significant. Therefore, the corresponding null hypothesis was retained. So, it could be inferred that there existed no significant difference in the job satisfaction between male trainee and female trainee teachers.

***Determination of Significance of Difference in Mean Job Satisfaction Scores between Urban Trained and Rural Trained Teachers***

The null hypothesis  $H_4$  was that there would be no significant mean difference in job satisfaction between urban trained and rural trained teachers. The 't' test value was shown in Table-5.

**Table-5: 't' test: Job Satisfaction between Urban Trained and Rural Trained Teachers**

Job Satisfaction	N	Mean	SD	SEm	df	t
Urban Trained	149	142.07	35.89	2.94	283	3.25*
Rural Trained	136	129.75	27.86	2.39		

\* Significant at 0.05 level

't' value was found to be significant at 0.05 level. Therefore, the corresponding null hypothesis was rejected. So, it could be inferred that there existed a significant difference in the job satisfaction between urban trained and rural trained teachers.

***Determination of Significance of Difference in Mean Job Satisfaction Scores between Male Trained and Female Trained Teachers***

The null hypothesis was that there would be no significant mean difference in job satisfaction between male trained and female trained teachers ( $H_0$ ). The 't' test value was shown in Table-6.

**Table-6 : 't' test: Job Satisfaction between Male Trained and Female Trained Teachers**

Job Satisfaction	N	Mean	SD	SEm	df	t
Male Trained	150	129.39	30.85	2.52	283	3.76*
Female Trained	135	143.75	33.42	2.88		

\* Significant at 0.05 level.

The 't' value was found to be significant at 0.05 level. Therefore, the corresponding null hypothesis was rejected. So, it could be inferred that there existed a significant difference in the job satisfaction between male trained and female trained teachers.

***Summary of Result***

1. No significant mean difference was found in job satisfaction between trainee and trained teachers at the secondary level ( $t = 0.02$ ;  $df = 638$ ).
2. Significant mean difference existed in job satisfaction between urban trainee and rural trainee teachers at the secondary level.
3. Job satisfaction of urban trainee teachers was significantly higher than that of rural trainee teachers ( $t = 2.04$ ;  $df = 353$ , significant at 0.05 level).
4. No significant mean difference was found in job satisfaction between male trainee and female trainee teachers at the secondary level ( $t = 0.92$ ;  $df = 353$ ).
5. Significant mean difference was found in job satisfaction between urban trained and rural trained teachers at the secondary level. It was also found that job satisfaction of urban trained teachers was significantly high ( $t = 3.25$ ;  $df = 283$ , significant at 0.05 level).
6. Significant mean difference was found in job satisfaction between male trained and female trained teachers at the secondary level. It was also found that job satisfaction of female trained teachers was significantly high ( $t=3.76$ ;  $df=283$ ; significant at 0.05 level).

### **Conclusion**

The present study revealed that the job satisfaction of urban trainee teachers was significantly higher than rural trainee teachers. The urban trainee teachers were more satisfied in their job because the student's role was good, there was parental involvement and the school administration was also in better condition. The urban trainee teachers possessed high motivation and they were very much responsible about their duties. Students and their parents were more conscious about their education. So, the urban trainee teachers showed greater job satisfaction.

It was also found that the job satisfaction of urban trained teachers was significantly higher than the rural trained teachers. The possible reason behind this finding was that the urban trained teachers in most cases lived in nuclear families with high economic status. Working places of urban teachers were in high academic culture and with high infrastructural facilities. The urban trained teachers were better qualified and up to date with their jobs. They were very conscious about recent changes in education and they accepted these easily. They were highly motivated and very responsible teachers. Because of these factors urban trained teachers showed higher job satisfaction than rural trained teachers.

A remarkable finding was that a significant mean difference was found in the job satisfaction between male trained and female trained teachers. The job satisfaction of female trained teachers was significantly higher than male trained teachers. The possible reason behind this finding was that the female trained teachers lived in economically richer families. The academic culture of the families and working place were also high. Higher socio-economic status and level of life satisfaction too encouraged the female trained teachers for higher levels of job satisfaction.

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## Leadership Ability of Elementary School Head-Teachers in Relation to Locality, Type, Sex and Managerial Aspect

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*Anjali Sharma\**

### **Abstract**

*The present study was conducted with the aim to compare leadership ability of elementary school headmasters in relation to locality, type, sex and managerial aspect. In the present research work, descriptive survey method has used. Null hypotheses were framed against the objectives. A sample of 120 headmasters from elementary schools working in government and private schools in Bundi district in Rajasthan was selected. According to the objectives of the study, all categories as govt. & private, rural & urban, primary & upper primary school headmasters and male & female heads were included equally in sample. For choosing the sample, the stratified random sampling method has been followed. Twenty headmasters from each block of elementary education department of Bundi district in Rajasthan were selected for the study. Leadership ability Scale developed by (Dr. Anjali Sharma & Manoj Kumar Sharma) was used to gather information. The analysis and interpretation of the data on leadership ability scale for elementary school headmasters was done by using ANOVA and t-test as statistical technique. The findings of the study are as: the principals differ in their leadership ability with the reference to locality and managerial aspect significantly, but do not differ with reference to sex and types of school.*

**Key Words :** *Leadership Ability, Locality, Managerial Aspect, Elementary School Headmasters*

### **Introduction**

Leadership is the phenomenon which is related to responsibility and quality. Responsibility and accountability towards an individual's work is very important to bring a sense of influence. It is the quality, by which a leader can direct, guide and influence the behavior and work of others so that he can accomplish specific goal in a given situation. It is an ability of a leader to induce subordinates to work with confidence and zeal.

Leadership is a process by which a person influences others to accomplish an

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objective and directs the organization in a way that makes it more cohesive and coherent. Leadership is a process by which an individual influences a group of individuals to achieve a common goal. Thus leadership is the quality of a leader to influence behavior of others. Thus, the leadership is a way by which authority is exercised. Leadership ability of a person is the ability—

- To influence the activities of an organized group in the task of goal setting and goal achieving.
- To encourage and help others to work enthusiastically towards objectives.

The issue of change and empowerment is the main focus of leadership. The leader is expected to continually generate new ideas for increasing effectiveness and productivity within the organization. She/he is required to provide needed strategies for executing the ideas/vision and motivate the employers to accomplish the vision by using their own initiatives to improve their inter-group relations in and the outside school.

Booker Janice Elaine Garrett (2003) studied teachers and principal's perception of leadership styles and their relation to school climate. The following findings were reported: 1) there is significant relationship between teacher's and principal's perception of laissez-faire leadership and aspects of school climate. 2) There is significant relationship relative to teacher's and principal's perceptions of school climate. Moore, Quincie Little (2003) conducted a study entitled as Teacher's perceptions of principal's leadership skills in selected South Carolina secondary schools.

Dillon, Robert Wayne (2003) conducted a study entitled A study of the differences in perceptions between teachers and their principals on the principal's leadership style and school climate measures. The objective was to find how perceptions regarding school climate and the principal's leadership style can differ between principals and teachers. The Sample included seven schools. The tools used in this study were questionnaires. Statistical Techniques were used as ANOVA, t-test, Standard Deviation, Mean etc. for data analysis. It was found that the schools examined lacked cohesive perceptions between teachers and principals to a significant degree. The principals in the 7 schools did not focus on gathering data from the various teacher groups concerning school climate and the principal's leadership style. No significant differences existed between male and female, white and non-white teachers or tenured and non-tenured teachers in their perception of school climate and the principal's leadership style.

Egley and Jones (2005)<sup>1</sup> performed a study analyzing the relationships of elementary teachers and their principal. They found that Inviting Leadership affected teacher morale. Inviting Leadership entails a principal focusing on compassion and the respect for the individual through collaboration and mutual respect.

Contreras, Yvonne (2008)<sup>2</sup> conducted a study. The purpose of this study was to identify and rank the knowledge, skills, and behaviours of principal leadership coaches as perceived by coaches and principals. The study also examined the principal's and coach's perception of the principal's ability to lead the school after having a leadership coach. The researcher found that coaches and principals agreed in general on the knowledge, skills, and behaviours that coaches needed to be effective. However, significant differences in perceptions did occur in some of the variables associated with skills and behaviours between principal coaches and principals. Also, coaches were more critical of their skills and behaviours. Coaches and principals strongly agreed that coaching resulted in improved ability to lead a school.

McGurder, Euna, Capella U (2009) conducted a study entitled as "Is Your Boss Crazy: A Study of Leadership Styles". This study examined the relationship between the emotional intelligence and leadership style of aspiring principals. Specific emphasis was placed on the tenets of transformational, situational, and transactional leadership style. Christine Cheah Yeh Ying<sup>1</sup>, Salina Daud, Irene Ting Wei Kiong (2011) conducted a study entitled as a comparative view on the influence of social capital, role of teacher and principal leadership. The purpose of this study is to examine the effect of both internal and external social capital on role of teacher and principal leadership from the views of principals and teachers.

Anju Mehrotra (2006) conducted a study entitled A Comparative Study of Leadership Styles of Principals in Relation to Job Satisfaction of Teachers and Organizational Climate in Government and Private Senior Secondary School of Delhi. The findings of the present study pose a serious threat to the leadership styles of principals who are not able to influence the present generation teachers. The teachers and the principals should be provided in service training in human relations to achieve a good school climate and a higher Job Satisfaction among teachers. Although new vision of the school's principal as leader is emerging, the new goals required of them in the changing educational environment needs to be addressed.

Shamshad Ali conducted the study entitled as a comparative study of the leadership style, interpersonal Relationship and effectiveness of the recruited and promoted Principals of Delhi. Findings Related to the Leadership Effectiveness as: The recruited and promoted principals do not differ significantly at 0.05 level of significance in relation to leadership effectiveness. The result of this study reveals that the leadership effectiveness is not contingent upon the mode of selection as both the groups of principals were found on the higher end in relation to their leadership effectiveness.

Literature on leadership indicates that a number of studies were conducted on leadership style, leadership behavior and skill also but studies on leadership ability were not found.. Due to that this variable is selected for the present research work.

### ***Objectives***

1. To compare the leadership ability of government school headmasters and private school headmasters.
2. To compare the leadership ability of rural area school headmasters and urban area school headmasters.
3. To compare the leadership ability of primary school headmasters & upper primary school headmasters
4. To compare the leadership ability of male headmasters & female headmasters.

### ***Hypotheses***

1. There is no significant difference between government school headmasters and private school headmasters on mean scores of leadership ability
2. There is no significant difference between rural area school headmasters and urban area school headmasters on mean scores of leadership ability.
3. There is no significant difference between primary school headmasters & upper primary school headmasters on mean scores of leadership ability.
4. There is no significant difference between male headmasters & female headmasters on mean scores of leadership ability.

### ***Population & Sample***

The population of this study was consisted of all 1748 Elementary school headmasters working in government and private schools in Bundi district in Rajasthan. To cover this target population, it 120 headmasters (about 7%) as a sample were selected. According to the objectives of the study, all categories as govt. & private, rural & urban, primary & upper primary school headmasters and male & female heads were included equally in sample. For choosing the sample from the target population, the stratified random sampling method has been followed. Twenty headmasters from each block of elementary education department of Bundi district in Rajasthan were selected for the study.

### ***Tool Used***

Leadership ability Scale developed by (Dr. Anjali Sharma & Manoj Kumar Sharma) was used. Validity coefficient is 0.81 and Reliability coefficient by test-

retest method is 0.85. There are seven dimensions of the scale as: Social intelligence, Emotional stability, Understanding of the conditions, Patience, Sense of responsibility, Decision power, Moral values.

### ***Research Method***

In the present research work, descriptive survey method has used.

### ***Analysis and Interpretation***

The scoring of the responses provided by the principals on the leadership ability scale was done as per the instructions given in the manual. The analysis and interpretation of the data on leadership scale for elementary school headmasters are discussed as follows.

#### ***A) Comparison of Leadership Ability of Govt. and Private School Headmasters***

For comparing the leadership ability of the principals in Govt. & Private schools, mean scores and SD were calculated and t-test was applied. T-test was also applied to compare the seven dimension of Leadership ability of the principals of both Government and Private schools. The government and private school headmasters differ significantly in their leadership ability as t-value (2.93, for  $df = 118$  at 0.01 level 2.62) is found significant.

When we analyzed the leadership ability dimension wise, the results obtained are as follows

- The t-value for social intelligence is found 2.18, which is insignificant.
- **The t-value emotional stability of headmasters is found 3.93, which is significant.**
- The t-value for power to understanding the conditions of headmasters is found 1.55 and failed to reach significant value.
- The calculated t-value for patience is found 1.94 which failed to reach at table value.
- The calculated t-value for sense of responsibility is found 0.75, which is failed to reach at value of significance.
- The t-value for decision power of headmasters is found 2.53, which is not significant.
- **The calculated t-value for moral values is found 2.87, which is higher than the value of significance.**

Thus, leadership ability with its dimensions namely, emotional stability, moral values is found significant than other dimensions.

#### ***B) Comparison of Leadership Ability of Rural and Urban School Headmasters***

To compare the leadership ability of the principals in rural and urban schools,

mean scores and SD were calculated and t-test was applied. T-test was also applied to compare the seven dimension of Leadership ability of the principals of both rural and urban schools. It is found that t-value (2.75, for  $df = 118$  at 0.01 level 2.62) is found significant.

When we analyzed the leadership ability dimension wise, the results obtained are as follows

- The t-value for social intelligence is found 2.14, which is insignificant.
- **The t-value emotional stability of headmasters is found 2.67, which is significant.**
- The t-value for power to understanding the conditions of headmasters is found 2.48 and failed to reach significant value.
- The calculated t-value for patience is found 1.33 which failed to reach at table value.
- The calculated t-value for sense of responsibility is found 0.45, which is not significant.
- The t-value for decision power of headmasters is found 2.75, which is not significant.
- The calculated t-value for moral values is found 1.77, which is lower than table value.

Thus, leadership ability of rural and urban school headmasters with its dimensions namely, emotional stability, is found significant than other dimensions.

#### *C) Comparison of Leadership Ability of Primary and Upper Primary School Headmasters*

In order to compare the leadership ability of the principals of primary and upper primary schools, mean scores and SD were calculated and t-test was applied. The t-value is 1.44 and failed to reach the 0.01 level of significance.

When we analyzed the leadership ability of primary and upper primary headmasters dimension wise, the t-values for all dimensions of leadership ability i.e. social intelligence, emotional stability, understanding the conditions, patience, and sense of responsibility, decision power, and moral values were failed to reach the table value at 0.01 level of significance.

#### *D) Comparison of Leadership Ability of Male and Female Headmasters*

For comparing the leadership ability of the male and female principals, mean scores and SD were calculated and t-test was applied. T-test was also applied to compare the seven dimension of Leadership ability of the principals of both sex. The t-value is insignificant.

When we analyzed the leadership ability of male and female headmasters dimension wise, the t-values for all dimensions of leadership ability i.e. social intelligence, emotional stability, understanding the conditions, patience, and sense of responsibility, decision power, and moral values were failed to reach the table value at 0.01 level of significance.

### ***Findings***

1. The principals of government schools and private schools differ significantly in leadership ability. The principals of private schools have better leadership ability in comparison to government schools. The principals of private schools have high degree of emotional stability and moral values than government schools. The two groups do not differ significantly on rest of the dimensions of leadership ability.
2. The principals of rural area schools and urban area schools differ significantly in leadership ability. The principals of urban area schools have better leadership ability in comparison to rural area schools. The principals of urban area have high level of emotional stability than rural area schools. The two groups do not differ significantly on rest of the dimensions of leadership ability.
3. On comparing the mean scores of primary school and upper primary school principals, no significant difference was found between the Leadership ability of the principals in these two types of schools. Both the groups do not differ in all the dimensions of leadership ability i.e. social intelligence, emotional stability, understanding the conditions, patience, and sense of responsibility, decision power, and moral values.
4. The male and female school principals don't differ in their leadership ability and its dimensions i.e. social intelligence, emotional stability, understanding the conditions, patience, and sense of responsibility, decision power and moral values.

### ***Conclusion***

The principals differ in their leadership ability with the reference to locality and managerial aspect, but do not differ with reference to sex and types of school. Leadership ability of urban school headmasters is comparatively higher because they faces various challenges, called urban challenges such as various extra activities and programmes, high awareness of parents, civic sense of public, competitive environment and interference of political elements in schools. Along with this we also find that Private school headmasters are significantly superior to govt. school headmasters in their leadership ability because they have less job security, less salary and high pressure of management. Management coerces

the to achieve the given targets. They also face high pressure of parents and community. They work in unfavorable conditions and at the same time they have to develop their leadership ability. Also, in case of dimensions of leadership ability; social intelligence, emotional stability, decision power and moral values are found significantly higher in private school headmasters as compared to govt. school headmasters. Mehrotra and Hessian. (2002) also supports the above facts in his study which was conducted on leadership style of principals of non-governmental schools and principals of government schools.

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## Landmarks in the Development of Primary Education in Darjeeling During The Pre-Independence Period

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*Sridipa Sinha\* and Arpana Singh\*\**

### **Abstract**

*Primary education is a very crucial stage of education. It is undoubtedly the foundation on which rests the whole structure of secondary and higher education. Children are introduced to the first stage of compulsory education in the primary school level. The system of primary education in India has gone through a number of developmental stages right from the colonial times and even so during the post independence period. Tracing the history of primary education in India is essential as it will help in getting a clearer perspective of the system in recent times and we can also identify the loopholes in the system and take remedial action. This paper tries to trace the development of primary education in the district of Darjeeling, West Bengal, during the colonial rule i.e. 1835-1947. Darjeeling has a very rich educational history, therefore it would be essential to know how the system of education developed in the area.*

**Key Words :** *Primary Education, Darjeeling, Colonial Rule, Pre Independence Period.*

### **Introduction**

The present age which is full of technological developments and innovations is a result of various changes and developmental phases that have taken place since the dawn of civilization. The society we live in is in a continuous state of flux, it is never static. This continuous process of change makes a society, nation and the world as a whole more developed and advanced. One factor that is closely related and responsible for the development of the society is education. Being one of the most important sub-systems of the society, education has in all times helped in shaping the future of the society and keeping it in accordance with the changing times. Education and society are closely related to each other. They are in fact interrelated and a slight change in one will surely affect the other. In order to evaluate, understand and get a clearer picture of the educational system of a country it is essential that we first find out about its culture, history, socio-economic factors and other aspects which help in its development. Therefore, we can say that the system of education in any country is closely

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shaped by the nature of various aspects of the nation. In spite of the fact that education is one of the most important factors for the growth and development of the individual, we cannot at all times be right when we say that all types of education are good. According to the Education Commission (1964-1966), The naïve belief that all education is necessarily good, both for the individual and for the society, and that it will necessarily lead to progress, can be as harmful as it is misplaced. Quantitatively, education can be organised to promote social justice or to retard it. History shows numerous instances where small social groups and elites have used education as a prerogative of their rule and as a tool for maintaining their hegemony and perpetuating the values upon which it has rested. On the other hand, there are cases in which a social and cultural revolution has been brought about in a system where equality of educational opportunity is provided and education is deliberately used to develop more and more potential talent and to harness it to the solution of national problems. The same is even true of the quality of education. Therefore, the system of education should be closely looked into and all the flaws in it should be rectified in order to make it a more powerful means of national development.

Darjeeling, at present has numerous educational institutions—reputed schools and colleges some which are run by the Missionaries, others by the Government and various privately owned institutions. The educational institutions in Darjeeling are famous throughout the country and internationally as well. However, on analysing the educational history of the area we find that the very basis of modern education in the hills was laid down by the British. Schools were started in order to educate the children of the Europeans. The kind of education given would be similar to the type of education provided in their native land. The system of primary education in Darjeeling has gone through various changes post independence. Therefore, it would be interesting to know the various phases of primary education in the area since its inception and all through the colonial period.

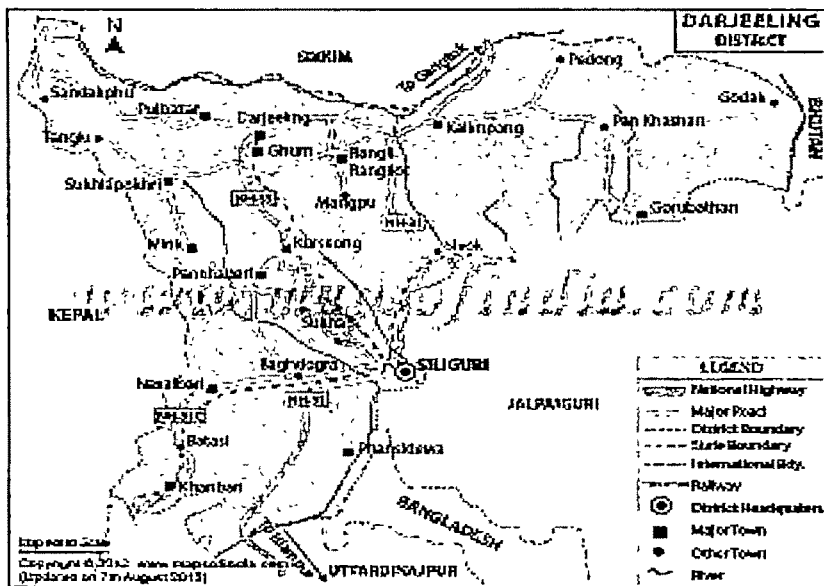
Primary education is a significant stage in an individual's life; it is the foundation on which the development of the individual and the nation as a whole takes place. A primary or elementary school is a school in which children receive primary education between the ages of about 5-11 years. It comes before secondary school and after preschool and it is the first stage of compulsory education in most parts of the world. Primary education in India is facing severe problems like shortage of resources, lack of political will, shortage of infrastructure, high pupil to teacher ratio and vice versa in some regions, poor levels of teacher training, etc. The Government of India has tried to improve the system of primary education by initiating a wide range of programmes. As for example, the most important and major programmes is the Sarva Shiksha Abhiyan (SSA) meant for the Universalisation of Elementary Education. The

overall goals of the SSA are universal retention, bridging of gender and social category gaps in education and enhancement of learning levels of children. If the system of primary education is faulty and has a lot of gaps in it, it will have adverse effects on secondary and higher education as well.

It is essential to trace the history of primary education in India, so that we can know how it was started, what were the major developmental steps taken by various agencies and what is its current status. Therefore this paper tries to trace the development of primary education in Darjeeling, during the colonial period that is from its early inception (1835) till 1947.

### ***Darjeeling – A Brief Introduction***

Darjeeling is a district belonging to the state of West Bengal. It comprises of four sub-divisions : Darjeeling Sadar, Kalimpong, Kurseong and Siliguri. Darjeeling is a hill station and was under the colonial rule for several years. It is also the home of some beautiful and endangered species of flora and fauna, the most famous amongst them being the red pandas, the orchids and the rhododendrons. Among the other factors which make it a chief tourist destination are the mighty Mt. Kanchanjunga, the beautiful stretches of tea gardens, the World Heritage Darjeeling Himalayan Railway and not to forget the distinctive characteristics of each season be it the short lived pleasant and warm summers or the continuous foggy and rainy monsoon days and the chilly winters with occasional snowfalls. Darjeeling has a rich history of education as well. Its educational institutions attract students from across the nation and overseas as well.



Source: [www.mapsofindia.com](http://www.mapsofindia.com)

### ***The Arrival of the British in Darjeeling***

The credit for the development of reputed educational institutions in Darjeeling goes to the British and all the Missionaries who came during the subsequent years. The British attracted by the cool climate had actually taken over Darjeeling to build a sanatorium for their soldiers. Dash (1947), When the East India Company in 1853 first acquired the nucleus of the Darjeeling district from the Raja of Sikkim, it was almost entirely under forest and practically uninhabited. Although it was stated to have been uninhabited probably a more accurate estimate was that the hill tract of 138 square miles contained a population of 100. In the years that followed the population of the region increased considerably and developmental works like construction of roads, building houses, cultivation, clearing of forests, etc. also started.

### ***The Early Initiatives Taken for Education***

There were no mainstream educational activities in the region, when the British first came to Darjeeling. The very first steps taken for the spread of education in the region was made by Rev. Start, a private missionary and Mother Teresa M. Mons. However, when Rev. MacFarlane came in 1869, a broad scheme of vernacular education was introduced in the district. He started the use of Hindi textbooks and also pleaded with the Government to give scholarships to his students. Although there were many hurdles on the way Rev. MacFarlane himself taught the students and with the help of the Government started many schools in different parts of the district. After the early initiatives of spreading education to the masses another important step taken was the establishment of the Darjeeling School. The permission for opening this school was given by the Government of Bengal. It was opened on the 20th of September, 1856. However, amongst other factors, attendance of the pupils was posing great problems. Since most of the students belonged to poor families they either had to stay back and help their families or go to other places with their parents. Dewan (1991), the General Report on Public Instruction of the Bengal Presidency, 1859-60, records the total number of pupils receiving instruction in Darjeeling School as follows: the number of boys on the rolls on the 30th of April, 1858 was only 18, on the 30th April, 1859 it had increased to 34; and at the close of the year under report the number was 45. Whereas, the total number of boys attending the school as shown for the session 1860-61 by W.W. Hunter (1876:188) is only 16, which is a steep decrease as compared to the figures of the former years. The British even after 35 years of colonialization could not do much for the spread of education. On the other hand many institutions of higher education had already been established in the other regions of Bengal, Darjeeling still was struggling to get proper students and widespread education.

### ***Development of Primary Education***

The local inhabitants at that time were not much interested in educating their children. However, the Europeans established many schools for their children. Two such schools meant for this purpose was Loreto Convent and St. Paul's School established during 1835-1866. Although the Education Department seeing the slow progress of primary education from 1852-1882, had instructed the Indian Education Commission to give special attention to primary education yet the progress was not good even till 1902. The Indian Education Commission 1882-83 recommended the use of vernacular in the spread of primary education. After this many schools were established in Darjeeling like the Bhutia Boarding School and the Darjeeling Zilla School. Rev. MacFarlane had trained a number of teachers and they were appointed the task of opening and running primary schools in villages. Although the natives in general were not very keen to educate girls, in 1873 a girl's school was also opened in Darjeeling. In the same year a school called Church of Scotland Mission School was opened in Kalimpong. This was the very first school of Kalimpong. A lot of schools for the Europeans were opened during the period 1866-1905, by the Missionaries along with the official enterprises like the St. Helen's Convent, Kurseong, Mount Hermon School, Darjeeling, Victoria Boy's School, Kurseong, etc.

Towards the end of the nineteenth century Darjeeling had progressed considerably in the field of elementary education. One of the important landmarks for the development of primary education in Darjeeling was the Bengal Primary Education Act 1919 and 1930. The Act of 1919 empowered the Municipalities to introduce compulsory primary education within their areas. In 1930 the Bengal Primary Education Act was passed with the motive of correcting the loopholes of the Act of 1919. It proposed to introduce compulsory primary education to both girls and boys of the age group of 6-11 years in rural areas. It also recommended that compulsory primary education would be introduced in Bengal within ten years from the date of this Act. One major setback for the development of primary education in Darjeeling was that the State Government never took the responsibility for it. It always shifted the work to the local bodies. The State Government did not even give adequate funds for the expansion of primary education, so it had to depend upon the Missionaries and Zamindars.

Another factor that helped in the growth of education was the opening of schools in tea gardens during the years 1905-1947. Since most of the people were coolies in tea gardens many schools were opened for their children. Dewan (1991), with a view to providing elementary education to the children of the tea plantation labourers of tea gardens and in factories, during the course of the

year 1907-08 the subject of training teachers for the schools of Darjeeling hills and the Terai was taken up and proposals were submitted to Government for an annual grant-in-aid of Rs.4272 and a building grant of Rs. 6000 to the Scots Mission Darjeeling for the establishment of a training school for primary teachers at Kalimpong. As such, the number of children getting school education on tea estates has risen during the year 1908-09 by nearly 64 per cent from 834 to 1,367.

The coming years brought fresh problems related to the medium of instruction. Nepali was the major language spoken by the people of Darjeeling. However, the instruction given to small children in primary schools was in Hindi. This seemed to be somewhat unjust for the children. After much deliberation, Nepali was accepted as the medium of instruction during 1917-1921. Hindi which was previously the medium of instruction was taught as the second language in order to prepare the students for higher education. Nepali was accepted as the medium of instruction, but in the beginning text books were hard to find. So with a lot of initiatives taken by people like Rev. Ganga Prasad Pradhan, Parasmani Pradhan, Miss M.B. Gardener, along with others Nepali textbooks were published and Nepali continued to be the medium of instruction in schools.

During the year 1941-42 there were 311 primary schools for boys and 21 primary schools for girls. The subsequent years saw the development of education in Darjeeling District. A lot of Secondary schools were also established and development was taking place in the sphere of education. India gained freedom in 1947 and post independence a lot of major changes came about in the field of primary education in Darjeeling.

Therefore, it can be concluded that there were many major changes and developments which took place during the pre independence era which has helped in the development of primary education in Darjeeling. At present primary education in Darjeeling comes under the West Bengal Board of Primary Education which started functioning on 2nd July, 1990.

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## Philosophical Research in Education : Some Critical Issues

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### **Abstract**

*Research is defined as the creation of new knowledge and/or the use of existing knowledge in a new and creative way to generate new concepts, methodologies and understandings. Philosophical researches have important place in the field of education as well as in life. However, the question remains that which type of research can be done in the field of philosophy of education. Two concepts can be found in the respective field of education and philosophy first Educational Philosophy and the second Philosophy of Education. The first one is basically concerned with Philosophy in which, we are applying the philosophical principles and theories in the field of education. Whereas the second one is basically concerned with education, in which we are trying to find the answer of What, Why, How, When of the educational questions. As now-a-days many philosophical researches in the field of education are going on there is a need to discuss on some important issues such as which type of philosophical researches can be carried on in the field of education?, what is the scope of philosophical research in education, How philosophical research differs from other researches? , what is the trend of philosophical research in education? etc. In this research paper above questions related to philosophical research, research, research in education, philosophical research in education and some issues such as duplication, gaps in the field have been discussed analytically.*

**Key Words :** *Philosophical Research, Research in Education, Education*

### **Introduction**

Research as a word has got currency in the recent time but it is very old in terms of practice. Human beings, since time immemorial, have been trying to know the things material or non-material. They had been always struggling with nature in order to meet the daily needs of life. For their own survival, human beings are trying to know natural endowment, its use and preservation. The curiosity of man has always motivated him to acquire new knowledge, tools,

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techniques and procedure. Because of the heuristic nature of human beings, men have partly established mastery over nature but still he is yet to get perfection. Therefore, he is continuously trying to explore the problems with the help of different methods. During this process he faces many quest and try to find their answers. Research is one of the ways to find answers of those questions. Let's see what research is in fact?

Research is the application of human intelligence in a systematic manner to a problem, the solution of which is not easily or readily available. In common parlance research could be defined as a thirst for knowledge. It may also be defined as a scientific search for pertinent information on a specific topic. In fact, research is an art of scientific investigation of a problem. Grinnell says, "Research is a structured inquiry that utilizes acceptable scientific methodology to solve problem and creates new knowledge that is generally applicable." Hereby scientific method means consist of systematic observation, classification and interpretation of data. According to Redman & Mory research is a *systematized effort to gain new knowledge* (Kumar, R., 2011). Some people consider research as a movement from the known to unknown. Actually inquisitiveness is the mother of all knowledge and the technique, which man applies for obtaining the knowledge of whatever the unknown can be termed as research.

Thus research is not all technical, complex, statistics and computers. It is a very simple activity designed to provide answers to very simple questions relating to day-to-day activities. On the other hand, research procedure can also be employed to formulate intricate theories or laws that govern our lives. The difference between research and non-research activity is in the way we find answers to our questions. For a process to be called research, it is important that it meets certain requirements and possesses certain characteristics. Further when we do any systematic study in the field of education is called educational research. Research in education is a systematic study in the field of education which contributes in the development of educational applied science by using scientific method and philosophical and critical thinking. The main objective of research in the field of education is to find the solutions of educational problems and helps teacher and educationist to achieve their educational goals effectively.

Research in the field of education includes critical enquiry in seeking educational principles. It also includes investigation to ascertain some educational activities. Here educational activities implies all concerns of education like aim, curriculum and methods, evaluation etc. and all these activities are deeply related to life. There are lots of questions, which are related to education such as what is essence of Education? How should Education provide for the needs of the man?

What should be the environment of Education? What should be the goal of Education? What should be the concern of the school? What should be the atmosphere of the school? What should be the role of the teacher in teaching-learning process? How should appropriate learning occur? Which teaching method should be preferred? What should be the curriculum? What should be the appropriate method for children with special needs? What is the role of ICT in teaching-learning process? How does philosophy affect education? What is the relation between philosophy and education? etc. Apart from these, there are lots of questions which can be explored by doing research in the field of education. Further these questions do not have only educational sense but also philosophical. Actually these questions are basically philosophical in nature which leads us to philosophical research in the field of education. Therefore, there is a need to know more about philosophical research in education. Let's see what philosophical research in education is actually?

### ***Philosophical Research in Education***

It is difficult to conceive of the whole problem of research in education without implying an educational philosophy. Superficially above questions are related to education but these are philosophical in nature. Thus the educational researches are designed to achieve the following four objectives-

1. To formulate new theory, principles and laws,
2. To establish new truth or reality,
3. To find out new facts, and
4. To suggest new applications.

These objectives are achieved by conducting historical, experimental, survey and philosophical researches. The philosophical researches are conducted to establish truth or reality. Education has two aspects: theoretical and practical. The practical aspect is enriched by scientific researches and conducting philosophical researches can develop theoretical part of education. In educational researches philosophical studied plays an important role. According to NCTE document, "These studies are important because they seek to examine the basic assumption about man, life and the world around him." (Singh, A., 2007). The basic concern of this type of research approach is reflection and clarification of assumptions and meaning. According to C. Sheshadri, (1997) philosophical research requires semantic clarity and meaningfulness, consistency and rigors of thought and methodological awareness.

### ***Dimensions of Philosophical Research in Education***

#### ***Area/field***

Philosophical researches have certain place in the field of education and

philosophical research in education has great importance in life also, but here the next question is that which type of research can be done in the field of philosophy of education. To answer this question, it is necessary to know the relation between philosophy and education. Education and philosophy both are related to life. Apart from this both are related to each other also. There are two concepts can be find in the respective field of education and philosophy, which are as follows-

1. Educational Philosophy
2. Philosophy of Education

The first one is basically concerned with Philosophy in which, we are applying the philosophical principles and theories in the field of education. Whereas the second one is basically concerned with education, in which generally we are trying to find the answer of What, Why, How, When of the educational questions. In this field we are also deciding the aim, curriculum, methods of education, discussing about the appropriate evaluation method of students. It also concerned question such as which discipline is good?, What is the place of teacher in teaching-learning process? etc.

Further Philosophy of education can refer to either the academic field of applied philosophy or to one of any educational philosophies that promote a specific type or vision of education, and/or which examine the definition, goals and meaning of education. As an academic field, philosophy of education is "the philosophical study of education and its problems...its central subject matter is education, and its methods are those of philosophy". The philosophy of education may be either the philosophy of the process of education or the philosophy of the discipline of education. That is, it may be part of the discipline in a sense of being concerned with the aims, forms, methods, or results of the process of educating or being educated; or it may be meta-disciplinary in the sense of being concerned with the concepts, aims, and methods of the discipline." As such, it is both part of the field of education and a field of applied philosophy, drawing from fields of metaphysics, epistemology, axiology and the philosophical approaches (speculative, prescriptive, and/or analytic) to address questions in and about pedagogy, education policy, and curriculum, as well as the process of learning, to name a few. For example, it might study what constitutes upbringing and education, the values and norms revealed through upbringing and educational practices, the limits and legitimization of education as an academic discipline, and the relation between educational theory and practice.

Philosophy of education can also be understood not as an academic discipline but as a normative educational theory that unifies pedagogy, curriculum, learning

theory, and the purpose of education and is grounded in specific metaphysical, epistemological, and axiological assumptions. These theories are also called educational philosophies.

Thus philosophy is a normative science which determines the norms of different discipline whereas education is an applied science in which we apply the principles and theories constructed by the philosophy and/or other disciplines. Simply we can say that “Philosophy is the theoretical aspect of education and education is a practical aspect of philosophy.”

From the above discussion it is clear that philosophy and education both are directly related to each other as well as life. Therefore, for making the life easier, happy and joyful and to satisfy our curiosity of life, it is necessary to think over the problems related to field of philosophy of education. Thus following type of research can be proceed in the in the field of philosophy of education.

- To Trace the Educational Implications of particular thinker/thoughts/their Ideas/schools of philosophy.
- Comparison/Contrast between two or more than two philosophies/ philosophers and their contribution in the respective field of education.
- Holistic study of an individual or an institution from the philosophical stand point.
- To find out the philosophy behind framing any manuscript/document.
- To find out the educational ideas of any personality.
- To understand philosophy and philosophical issues of a subject.
- Analytical study of a particular philosophy.
- To find out a philosophy in a particular system.
- To find out the contribution of any philosophy in education.

### *Methods / Approaches*

When we reflect over any problem in the respective field of philosophy scientifically, critically and tries to find the solution with the help of philosophical methods then it is called philosophical research. In the same way when the problem is related to the field of philosophy of education and the solution is drawn by using philosophical research methods then this type of research is called philosophical research in education. Here the fundamental question is what is a philosophical method? Or what is philosophical methodology? Methodology is a vital instrument for the growth and development of knowledge (Rai, C. 1980). Philosophers, scientists and others have developed certain methods to reach the goals they set before themselves. There are different types of methods for conducting research and gaining knowledge.

Philosophy is primarily concerned with the fundamental problems of experience, such as, existence, reality, soul, God etc. To attain this goal, the philosophers adopt certain rules on which they proceed. The aggregation and integration of methods is a means or instrument of attaining a philosophical end. There are five main philosophical research methods which are Dialectic, Logico-Mathematic method, Critical method, and Analysis and Phenomenological method.

- Dialectic method is not merely a refutation of doctrine. A dilemma cannot be possible without the knowledge of the oppositions or contradiction. Dialectic can occur in question and answer form and also in the form of contradiction, opposition or Antinomies.
- In Logico-Mathematical method, we begin with axioms or self-evident principles. These self-evident principles are always the starting points of mathematical method. This method always includes logic. Clearness, strictness, sharpness, impartiality, and universal validity of mathematics attracted philosophers to use this method of thinking.
- In critical method we are observing the things and thoughts critically, means, we are observing both the sides, positive and negative, of things and thoughts. Then we are evaluating and defining that particular thing and thoughts.
- Philosophical analysis is an understanding of fundamental concepts, other related concepts, and interrelationship between these concepts. In this method analysis takes place by dividing the phenomena in least possible fraction then deeper study of each part.
- Phenomenological method requires three reductions i.e. Exclusion of all subjectivity because it needs purely objective standpoint, Exclusion of all theoretical knowledge, and Exclusion of all traditions. This method lays emphasis on intuition.

#### *Techniques of Philosophical Research in Education*

Philosophical research does not require any elaborate technique. It is matter of erudition and analytical insight and synthesizing ability. It needs a good knowledge of philosophical thought in general and familiarity with the major school and trends. The insight and analytical faculty helps in the interpretation of the data that is secured. The task of interpretation is mainly that of ascribing a significance, meaning purpose and relatedness to a common end, to an apparently heterogeneous mass of data. Philosophy offers more freedom to the researcher. Philosopher begins his research for wisdom with experience. The philosophers shares with all other sciences. He observes, hypothesizes, tests or verifies the logical consistency of his hypotheses and generalizes or draws

conclusions. The library technique and content analysis technique is used mainly in philosophical research.

### *Feasibility of Philosophical Research in Education*

Philosophical method relentlessly investigates the substrata of our empirical inquiries; it seeks to verify the truth of our most radical assumptions about man and the universe. The question over the usability and feasibility of any work is the sole. It gives motivation, psychological satisfaction and right direction to the investigator to conduct the activity or work. That's why whenever anyone conducts any work; the first question arise that what is the feasibility of that work? In the same way here the question is that what is the feasibility of philosophical research in the field of education? Or how philosophical research in the field of education is useful for the individual, society and universe?

Philosophical research methods are more rational than other research methods. So whenever any individual is conducting philosophical research, means he is more rational than other individual and through philosophical research any individual can enhance his excellence and achievement towards more understanding. As we discussed earlier that philosophical research is concern with critical analysis, by which we can aware with the both aspect of the phenomenon i.e. positive as well as negative. Being analytical in nature philosophical research helps us to know about the atom part of the phenomenon. Besides this philosophy and education both are directly related to society also. So any research in the field of philosophy of education has no feasibility until that has not social relevance.

### *Trend Report*

Singh G. (2005), conducted a research on "*Analytical Study of Researches in Philosophy of Education in India.*" The objectives were—

- To explore the uncovered and minimally viewed areas of Indian researches in Educational Philosophy.
- To examine critically the different areas of Indian researches in Educational Philosophy.
- To study decade-wise growth of Indian researches in Educational Philosophy.
- To analyze the trends, defects and weaknesses of the researches in Educational Philosophy in India.
- To encourage Technology integration among the post graduate courses in teacher education and researchers.

For conducting this study she has reviewed one hundred and eighty seven (187) studies in Educational Philosophy at the doctoral level in the Indian Universities.

For the sake of convenience of analysis she has classified the research studies into eight categories according to the theme of researches in Educational Philosophy—

1. Ancient Thoughts
2. Modern Thinkers
3. Western Thinkers
4. Indian Languages
5. Values
6. Comparative Studies
7. Schools of Philosophy
8. Miscellaneous

Further she has classified above studies decade wise

S.N.	Categories	Upto 1970	1971- 1980	1981- 1990	1991- 2000	2001- 2005	Total
1.	Ancient Thoughts	3	7	12	4	1	27
2.	Modern Thinkers	5	14	30	16	7	72
3.	Western Thinkers	-	3	4	1	-	8
4.	Indian Language	2	3	1	2	3	11
5.	Values	1	2	2	2	3	10
6.	Comparative Studies	4	5	9	5	-	23
7.	Schools of Philosophy	1	3	-	4	-	8
8.	Miscellaneous	2	8	16	1	1	28
	<b>TOTAL</b>	<b>18</b>	<b>45</b>	<b>74</b>	<b>35</b>	<b>15</b>	<b>187</b>

Thus above table shows that—

- Up to 1970, a total of 18 research works were done out of which the maximally explored area was researches related to modern Indian thinkers and the least explored was researches by western thinkers.
- The numbers of researches were more than double in the next decade showing increased inclination towards exploration of philosophy of education. But gradually the numbers decreased in nineties and twenties.
- There is very much repetition of studies such as fifteen studies on

educational philosophy of Maharshi Aurobindo, ten on Tagore, twelve on Mahatma Gandhi's educational thought etc.

- There is minimal research work on Vedic education, language, philosophical problems among society.

### ***Critical Issues in Philosophical Research in Education***

In the recent year philosophy of education in India has been passing through difficult times due to lack of methodological rigor and poor quality of researches. The outcome has been that philosophical research in education has to fight for its survival. This subject also has been neglected by the general philosophers. However, this situation of negligence should not continue anymore. This definitely calls for rethinking to check its downfall and to visualize the rich opportunities this field provides. Recent developments of innovative technologies have provided new possibilities to researches. One should aim to restore the position of quantity and quality of researches in philosophy of education to its right place. A normative paradigm is proposed to describe the characteristics of philosophy of educational research in a national control. Though above research trend in the field of philosophy of education shows the philosophical interest of researchers but still it is not enough. Researches in the field of philosophy of education have influenced with some critical issues. These critical issues are—

- Problem Selection/Avoiding Repetition
- Gaps in the field
- Lack of depth, Failure to generalize, obtains a deeper insight, clarify the meaning, justifying the relevance and develop a broader/ larger/universal perspective.

### ***Problem Selection/Avoiding Repetition***

The most crucial moment in the life of a researcher comes when he has to select a problem for the purpose of his research. Every researcher is faced with this problem. The situation became more crucial when it is related with the philosophy. Finding a problem may include satisfying a personal curiosity about something seen, heard or wondered about or it may include developing through natural interests or felt needs of the researcher. It is not always possible for a researcher to select and formulate his problem simply, easily, clearly and completely. Initially he has a general diffuse, even confused notion of the problem. And in this confusion many times he select the problem which is already has been researched. Thus avoiding duplication of the research topic is basic consideration in selection of the topic. For this researcher should survey the literature carefully before he starts his study. He should ensure that his problem has not been already studied and solved. However, in rare cases, some

studies may be repeated for the cross-validation purpose. If there is scope for bringing new evidence by using improved design, then duplication may be justified. Even then, it should be reviewed according to the principle that it should make a contribution to the advancement of education as a science.

### *Gaps in the Field*

As we discussed earlier research demands some new body of knowledge. Research itself concerned with searching new ideas, theories, and body of knowledge. Though now-a-days philosophical researches are taking place but most of them are duplication or repetition. Now-a-days philosophical researches have been limited to just find out the educational implication of any particular philosophy/philosopher or to comparison of philosophies limited to few well known figures only. And for this we should broaden our thinking and move to contemporary philosophies, philosophers, and thinkers.

*Lack of depth, Failure to generalize, obtains a deeper insight, clarify the meaning, justifying the relevance and develop a broader/larger/universal perspective*

As philosophy and education both are directly related to life, the problem under this field should be researched in such a manner that can be generalized to the whole universe as well as all human being. As philosophy is the mother of all sciences, it concerns all the disciplines, thus studies under this field should have universal perspective by which it can affect all human being and help them in broadening their vision towards the universal happiness.

### *Suggestive Measures*

Thus philosophical researches in the field of education are the key researches for knowledge generation and theory building. Nowadays the research scenario especially philosophical research in the country is grim. There is need for the development of innovative researches in philosophy of education. Hardly any researcher has taken up the problems related to the Indian classroom, schools and society. Researchers are mostly at information level or repetitive without describing the new contribution. Researchers are unable to influence educational policy, programmes and practices. Today the world is floundering because it is devoid of Indian Philosophy. Through ICT, Indian Philosophy can be re-discovered and explored globally. ICT will be very fruitful and useful in the flow of knowledge, resources can be available at the click of mouse or button. Through ICT, researches on Yoga, Vedanta and Upanishads can gradually explore the ultimate limits of our consciousness, creativity and compassion. This type of researches can be enriched by—

- Making good policies in the field of philosophical research.
- Proper Implementation/Practice of philosophical research.

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## Raja Rammohan Roy : The Great Social Reformer

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*Aisharya De\* and Mita Banerjee\*\**

### Abstract

*18th century was a century of ignorance, darkness and superstitions. Social degradation had its firm root in religion. In the society there was torture of the priest class. Condition of the women in the society was miserable. Another shameful character of the Hindu society was polygamy. The then Hindu society was dominated by the caste system. People of the society observed many social rites and rituals mechanically which were degrading the texture of the Hindu society. One such horrible rite was 'Sati', a ritual suicide. It became necessary to mobilize public opinion regarding this cruel rite and this was done by none other than Raja Rammohan Roy. His counter petition, several anti sati tracts emphasised over the fact that in Hindu shastra, nowhere sati was enjoined. This made the task of Lord William Bentinck easy to pass 'Sati Regulation Act', where sati was declared punishable as criminal offence. Raja Rammohan Roy through his writings opposed polygamy and caste system also. With the passage of time, our society has achieved a lot, but still it has to travel a long path. The present study significantly focused on those areas where Raja Rammohan Roy's social contributions still find an important place in the lives of people and society at large.*

**Key Words:** *Hindu society, polygamy, caste system, sati, Raja Rammohan Roy, social contributions.*

### Introduction

Eighteenth century was a century of intellectual stagnation and social degeneration. Society practiced many social evils and corrupted religious practices as a symbol of its degeneration and degradation. The priests taking the advantages of the ignorance and superstitions of the men in general, established themselves as a true exposure of Hinduism, though they were not acquainted with the original scriptures of the Hindus. They started popularizing Hindu mythology, popular prejudices of the men. It was clear that social degradation had its firm root in religion in Bengal. This was not enough. Lack of education, poverty and political servitude had blocked the minds of the common people. They forgot to think rationally. They behaved like immature. They were lacking

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reason and judgment. People accepted those ceremonies and rites which were going to destroy the texture of the society and debase human nature.

Another shameful character of the Hindu society was Kulinism. For the sake of money, many kulin Brahmans used to marry ten or fifteen wives, who used to remain true to their absentee husband without even seeing or receiving any support from their husbands. Far from spending money on their marriage, usually a large sum of money was taken by the family members of the women at their marriage and used to bestow them in marriage on those who could pay most. So, after marriage with sick, infirm persons, the women soon became widows and led a miserable life without any fault on their own.

On the death of her husband, deprived of the share of her husband's property, the widows had three options as:—

1. To live a life of slaves fully depending on others without any hope of support from anybody. 2. For her maintenance and independence, to take the path of unrighteousness. 3. To die on the funeral pyres of her dead husband to prove their devotion to their deceased husband by submitting themselves to the most cruel, painful death, in the name of the religion. This revealed the fact that the position of women in our society was always degrading. At marriage, the wife who was recognised as half of her husband in their life after marriage they were no better than slaves. They used to do all the works of the house like they used to clear the place every day, very early in the morning whether cold or wet, wash the floor and cook night and day. They used to serve food to her husband and other members of the family. If she committed slightest mistake in her performance of the duties, she was very often insulted, by the members of in-laws. After the male members of the family had fully satisfied themselves, she had to content herself. So, generally they used to get something which was not sufficient for them.

The then Hindu society was dominated by caste system. Division into caste and the distinction of castes were one of the most important sources of social degradation. It was at that time when an urgent need was felt for the reformation of the then Hindu society and surely this reformation should centre round on main topic, namely the improvement of the condition of women which could lead to female emancipation.

### ***Objectives of the Study***

1. To study the social background of Bengal at the time of Raja Rammohan Roy.
2. To determine the role of Raja Rammohan Roy as a social reformer.
3. To critically analyse the present day relevance of his social contributions.

### ***Definition of Terms***

**Social reformer :** A social reformer is a disputant who advocates for reforms to solve social problems. These people have been able to make an impact on the world with their philosophy and great work for the society. Raja Rammohan Roy is regarded as a social reformer in a true sense of terms as he fought against one of the malignant disorders of popular Hinduism, *Sati*. He wrote several anti *sati* tracts which had a motive of rousing the conscience of his countrymen and last but not the least is that with his reformatory activities Raja Rammohan Roy made an everlasting impact on the lives of people and society at large.

**Raja Rammohan Roy :** Raja Rammohan Roy was a nationalist reformer. He was born in 1774, in the village Radhanagar. His father was Ramakanta Roy and mother was Tarini Devi. For nearly ten years Rammohan Roy worked under John Digby. In 1814/1815 Raja Rammohan Roy came to Calcutta and started his many sided reformatory activities in social, religious and educational matters. In the history of India, the name of Raja Rammohan Roy will be linked for all time with his achievement in terms of abolition of *sati*. He vehemently opposed the caste system and polygamy. The philosophies and contributions of Raja Rammohan Roy are still significant today.

### ***Significance of the Study***

The present study focuses on the role of Raja Rammohan Roy as a social reformer. Raja Rammohan Roy was a symbol more of the times ahead of him than of the times he belonged to. His writings were to shape 19th century elite consciousness in decisive ways, with particular consequences for women and for the historiography of women in modern India. In order to improve the present condition of society in terms of women empowerment, non discrimination based on caste, dissemination of useful knowledge, it is important to know how the writings of Rammohan Roy championed the cause of women emancipation and promulgated the ideas of enlightenment, liberty and equality along with the method of enquiry. As compared with past, society in modern times have achieved a lot but in reality it has to still travel a long way. The present study emphasizes the areas where the contributions of Raja Rammohan Roy towards society are still significant today. Under this study, flipping through the pages of social works of Raja Rammohan Roy, one can see the extent to which he strived to improve the conditions of the society at large. Raja Rammohan Roy believed that the entire human society is a big family. Today the present generation is conscious about two contributions of education in developing good human relations—Education for national integration and Education for international understanding which arises from this notion of Raja Rammohan Roy—that

everyone is the member of world human society. So from this perspective of national integration and international understanding, this study is significant. We need to be progressive and rational in our outlook which will help us to eradicate social evils. Raja Rammohan Roy was the first to realise that to uplift the then human mind, knowledge of science is required. Raja Rammohan Roy was rightly said as the father of modern India. He was the man who truly realized the significance of the modern age. Many of today's problems can be solved if the essence and significance of his activities are understood.

### *Review of Related Literature*

Menski Werner, (1998) in his article *Sati*: a review article, reflected the fact that the last recorded case of *sati* in India, the murder of Roop Kanwar, which took place in the large Rajasthani village of Deorala in 1987, has served as a focus for international and Indian women activists' opposition to continuing gender violence and to male domination in general. He also argues that greater attention needs to be paid to the older Hindu literature and tradition for a fuller understanding of the *sati* phenomenon.

Andrea Major (2007) observed *Sati*, the burning of a Hindu widow on her husband's funeral pyres, has always been a sensational issue and a highly controversial act. Always exceptional and effecting only a tiny minority of Hindu widows, it has remained close to the surface of social and political life and has played a disproportionately prominent role within Indian history and culture. The importance given to this rite in 'Western' accounts of India since the fifteenth century, as well as the significance of its 'ethos', if not its actual practice, within Indian culture, has meant that *sati* has remained in the public eye for several centuries and has taken on a variety of different meanings at different times, and for different observers. This anthology explores some of these multiple meanings of *sati* by bringing together a wide range of both Indian and European historical sources on *sati*, spanning many hundreds of years.

C.A. Bayly (2007) studied that Raja Rammohan Roy learnt several European languages and by 1815, had become spokesman for a religious tendency in Hinduism (Vedanta Sastra), that rejected "idol worship" and asserted that true Hinduism was monotheistic and little concerned with issues of caste. He founded the Atmiya Sabha (Friendly Society) and later the Brahmo Samaj (Society for the Supreme Being). His opposition to the burning of widows on their husbands' funeral pyres, *sati*, a relatively uncommon but ideologically charged practice, earned him the enmity of the neo-orthodox in Bengal. His insistence that modern Hinduism was a corrupt form of a pure and monotheistic ancient religion caused his mother to disown him and his relations to try to disinherit him. But the crusade against corrupt practices, especially widow-burning, led him to publish

numerous pamphlets in English, Bengali and Sanskrit and to found the subcontinent's earliest Indian-run newspapers.

Reena Patel (2013) reviewed women's property right in her book "Hindu Women's Property Rights in Rural India: Law, Labour and Culture in Action". He reflected the fact that Hindu women in India have independent right of ownership to property under the law of succession. However during the last five decades of its operation not many women have exercised their rights under the enactment. It also depicted the construction of Hindu women's claim to independent land ownership within law in India.

### *Social contributions of Raja Rammohan Roy*

Raja Rammohan Roy opposed every form of social inequality and oppression, he observed in the then Bengali society. As a man of multidimensional personality, he fought against one of the malignant disorders of popular Hinduism, *Sati* in a reformatory style. He did not expect its abolition overnight with the quick physic of his arguments. He knew that this would require a long and hard struggle. All he wanted was to give a widest publicity to this terrible social evil; he wanted to aware his countrymen regarding the evil effects of this customs through open discussion and controversy. The matter of *Sati* took the attention of the British as early as in 1772. Actually no rule was drawn up and nothing whatever was done for some years.

Regular statistics on the subject was started in 1815. When the Regulations relating to *sati* promulgated in 1813 and in 1815, it was strengthened by important additions and were finally issued in a collected form in 1817, the orthodox circles of the society promptly submitted a petition to Government strongly urging the repeal of these Regulations. As against this, by submitting a counter petition, Rammohan Roy started his battle against this cruel rite. In this counter petition Raja Rammohan Roy mentioned that the mode by which *Sati* is performed is nothing but the murders, according to every shastra,

In August, 1818, the counter petition was presented. Afterwards he wrote an anti sati tract composed as a dialogue between an advocate for, and an opponent of, the practice of burning widows alive. The first publication of the tract was in Bengali. At the end of November 1818, the English translation was published. The tract was known as "First Conference between an Advocate for And an Opponent of the Practice of Burning Widows Alive".

This is nothing but an attempt to draw public attention to this matter. A second and much longer conference he wrote following the first. It was also first published in Bengali. In this tract the dialogue was retained. Raja Rammohan Roy believed that one of the causes for *Sati* practice was the deprivation of

women from the property rights. In 1822, he wrote his learned essay entitled "Modern Encroachments on the Ancient Rights of females according to the Hindu Law of Inheritance", where he mentioned that the practice of debarring women from their ancestral property is nothing but the distortion of the tradition of Hindu law. In his essay on the "Rights of a Hindus Over Ancestral Property according to the Law of Bengal", Rammohan Roy concluded that a man in Bengal can alienate even the ancestral property which he has inherited, and that such alienation may be an immoral act if it deprives his family of the means of support, but it is not an illegal act.

The above order of company for *Sati* to "Regulate it" instead of its prohibition took the lives of a huge number of widows between 1815 and 1818, statistically the figure rose from 378 to 839 in the six divisions of Calcutta, Dacca, Murshidabad, Patna, Benaras and Bareilly .

This made to think over the matter again and called for immediate and entire prohibition of *sati*. However this was not accepted by Lord Amherst. He himself was not in favour of the total suppression of *sati*. After Lord Amherst, when Lord William Bentinck took the charge of Governor Generalship, he made confidential enquiries from 49 experienced officers which elicited the fact that 24 out of 49 officers favoured immediate and entire abolition. Raja Rammohan Roy also appealed to William Bentinck to pass a law banning *sati* practice.

Raja Rammohan Roy was a reformer first. So, he did not want to clash humanity and religious liberty. He first proved from Shastric interpretation that *Sati* was not a religious duty. By doing this Raja Rammohan Roy made the works of the British Government easy and relieved them from the deadlock of clashing the principles of humanity with the principles of religion. On December, 4, 1829, the *Sati Regulation Act* was passed. In this regulation act, *Sati* was declared punishable as criminal offence. This did not run without protest on January 14th, 1830, 800 inhabitants of Calcutta prayed to the Lord for annulment of the regulation. In reply Bentinck advised them to appeal to King-in-Council. The opponents decided to appeal to the King-in-Council. At that time Rammohan also did not sit idle. He prepared a counter petition and decided to go for England to submit his counter petition there. The appeal against the abolition of the inhuman rite was rejected by the Privy Council.

Rammohan Roy was equally vocal in the abolition of the caste system. He wrote in The Brahmunical Magazine—"We have been subjected to such insults for about nine centuries and the cause of such degradation has been our excess in civilization and abstinence from slaughter even of animals; as well as our division into castes, which has been the source of want of unity among us". He believed that the distinction of castes, introducing innumerable divisions among

them, has entirely deprived the Hindus of political feeling. Rammohan Roy in 1827, published with a Bengali translation the first chapter of a Sanskrit work against caste, named "Vajra Suchi" by Mrityunjayacharyya. Rammohan Roy proposed for Saiva marriage for fusion of castes and sub castes and sects. There is no discrimination of age and caste or race in Saiva marriage.

Atmiya Sabha or Friendly Society was formed by Rammohan Roy in 1815. This was a purely Hindu institution of learned men believing in One Only God. In his Atmiya Sabha, not only the religious principles, but the absurdities and peculiarities of various Hindu social customs and idolatry used to be discussed and efforts used to be made to condemn it. This was established for reforming society by discarding all undesirable and unreasonable beliefs and practices. In this Sabah, social, religious and educational issues are discussed. In August 1828, on the basis of the suggestion of one of his friends, he formed another society, Brahmo Samaj, a purely Hindu organisation. This was formed to inculcate among the Hindus the worship of the formless Supreme Being based on the verdict of the Hindu scriptural authorities. In the Trust Deed also it was held that the building would be a place of public meeting, where all sorts of people without distinction could attend.

Raja Rammohan Roy was a great lover of freedom and as well as he always held women in high esteem. "Lokasreya" or the good of the people was Rammohan's social philosophy. Rammohan always wanted to make it clear before his countrymen that in the Hindu scriptures, disinterested works had been more preferred to the works performed for the sake of fruition (rewards, here and hereafter). He believed that the social and intellectual progress of India could be achieved by rousing his contemporaries from their dogmatic slumber, by inspiring them with new visions of life, with new ideals of life and by illuminating their minds with the new knowledge of the west. He always held the view that sastras have mentioned of ceremonies for those men, whose minds are occupied by desires, passion and cupidity. In his personal life he was an adherent advocate of truth and reason. He believed that the caste system could not do any good to man. He also believed, in the innate faculty of mankind. He wanted to show his countrymen that the real spirit of the Hindu scripture is the declaration of the unity of God. He had depth belief in rituals which are of social character He wanted to give this message to his countrymen that they should understand the inner significance of the rituals. His philosophy was the synthesis between the essential spiritual nature of the highest conception of religion in India on one side and on the other side the ethical values of western thought.

He showed that the wilful murder of women, the practice of *Sati* has never a custom of Hinduism as it is only practiced in a small part of Hinduism. In the

tract of second conference, Rammohan Roy wanted to show his countrymen through an imaginary dialogue that women are deprived from all sorts of excellent merits to which they are entitled by nature. In the same tract, he pointed out that in the name of death, men shudders, and women boldly faced it. So, the women cannot be charged with the allegation of devoid of resolution. Regarding the trustworthiness of women, Rammohan Roy wanted to inform that the instances of deceived women are ten times greater than the number of deceased men. Not only this, but also he wanted to make his countrymen conscious regarding the status of women in our society. In his second conference he mentioned the fact that Women are everywhere ill treated. Rammohan Roy from the view point of a reformer wanted a thorough change in the mentality of the people. Rammohan Roy through his writings proved that self immolation is a crime and the persons who are encouraging this practice are equally punishable. Rammohan Roy always aimed at reconciling individual good with the good of the society. In the words of Brajendranath Seal, Raja Rammohun Roy always held the view that individual progress is the touchstone as well as the measuring rod of social progress; but he knew that the individual's progress could be secured only by organizing and establishing the conditions of social progress. Actually harmonising individual good with social good was the main guiding principle of Raja Rammohan Roy. Rammohan Roy observed that the sacred duties of the Hindus are confined to ceremonial rites, worship, offerings etc., but not to the service of mankind. He always wanted to lead the Hindus towards the wider field of social service but not to self centeredness. Rammohan Roy using the platform of Atmiya Sabha and the printing press always held that if anyone wished to marry second time, having his first wife alive, he should prove before competent legal authority that his conditions for polygamy are in accordance with the conditions permitted in Hindu Shastras.

### ***Present Day Relevance***

Still today we miss the valuable ideologies of this great Reformer Raja Ramohan Roy. We are in serious needs of Raja Ramohan Roy's philosophies even today for enlightening and uplifting our society. Our society has achieved a lot with passage of time; still it has to travel a long path.

The custom of *Sati* has taken a new version in the form of 'female infanticide' and 'female foeticide', gender based oppression of women in India.

In general the **sex ratio imbalance** worldwide, with a decreasing number of females for every 1000 males may be an indicator of the growing increase of female infanticide.

"During 2001-2011, the share of children to total population has declined and

the decline was sharper for female children than male children in the age group 0-6 years”, said the study “Children in India 2012-A Statistical Appraisal” conducted by the Central Statistical Organization. According to this report, female child population in the age group of 0-6 years was 78.83 million in 2001, which declined to 75.84 million in 2011.

*According to Indian Census 2011:*

- The sex ratio in India slumped from 976 girls per 1000 boys in 1961, 927 in 2001 to 914 in 2011. (The lowest since independence.)

As per the report of INDIA TODAY, New Delhi, April 1, 2011, on Census data:– India’s 1.21 billion strong population has still to shake off its bias against the girl child.

*Raja Rammohan Roy’s views on women’s property right are still significant today.*

**As per Women’s Right to Properties Act, 1937**, the widow of a deceased coparcener of a Mithakshara undivided family will have the same interest which her husband had while he was alive. With the passing of the Hindu Succession Act, 1956, the position of widows and daughters came to be improved.

**Hindu Succession Act 1956:** Section 6 of the Hindu Succession Act has been amended by the Hindu Succession (Amendment) Act, 2005, and according to which, in a joint Hindu family governed by the Mithakshara law, the daughter of a coparcener shall by birth become a coparcener in her own right in the same manner as the son. Thus, under the Hindu Succession (Amendment) Act, 2005, the daughters are entitled to equal inheritance rights along with other male siblings, which was not available to them prior to the amendment.

Raja Rammohan Roy boldly attacked the caste system. He believed that the caste system could not do any good to man. This philosophy of Rammohan Roy is still significant today. Concepts like, ‘equalisation of educational opportunities’ and ‘education for all’ rest on the same philosophy of removal of untouchability. Since the inception of our constitution, the same philosophy is held in its various articles. Article 15 of Indian Constitution, as enacted in 1950, prohibits any discrimination based on caste. Article 17 of Indian Constitution declared any practice of untouchability as illegal. In 1955, India enacted the Untouchability (Offences) Act (renamed in 1976, as the Protection of Civil Rights Act). It extended the reach of law, from intent to mandatory enforcement. The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, similar to the Hate Crime Laws in the United States, was passed in India in 1989. But the caste system is yet to be completely eradicated from the mindset of all people.

### Conclusion

Thus we find that the activities and contributions of Raja Rammohan Roy still find an important place in the lives of people and also in the society at large. Raja Rammohan Roy will still be adored and honoured and long cherished for many years to come. People of today are highly delighted to read the Epitaph in his tomb which reads: "To great natural talents, he united through mastery of many languages and distinguished himself as one of the greatest scholars of his day. His unwearied labour to promote the social, moral and physical condition of the people of India, his earnest endeavours to suppress idolatry and the rite of *Sati* and his constant zealous advocacy of whatever tended to advance the glory of God and the welfare of man live in the grateful remembrance of his countrymen."

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## Status of Elementary Education in Some Muslim Predominant Areas of West Bengal\*

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*Sanat K. Ghosh\*\**

### **Abstract**

*The main purpose of the present study was to study the status of elementary education in some Muslim predominant areas of West Bengal, which is the third largest Muslim populated State in India. The contextual background of the study was implementation of SSA since 2002 and the recommendations of the Sachar Committee (2009). Objectives of the study were to find out the status of elementary education in Muslim predominant areas in terms of— (i) Enrolment, (ii) Gender parity, (iii) Increase in enrolment rates, (iv) School-leaving and Drop-out rates, (v) Reasons behind long & frequent absence in classes and Drop-out from schools, and (vi) Beneficiaries of different facilities with special focus on Muslim students. The sample for the survey was drawn purposively from the Muslim predominant 170 Schools including 18 Madrasahs having 104 Primary and 66 Upper Primary Schools from 115 Villages of 11 Blocks and 45 Wards of 9 Municipalities under three sampled Districts, viz., Birbhum, Koch Behar and North 24 Paraganas. The mixed result indicated that in spite of some backwardness few positive indications are found in education in Muslim predominant areas of West Bengal.*

**Key-Words :** *Elementary Education, Muslim Minority,*

### **Introduction**

Muslims occupy an important position in the Indian society and culture. Muslims are in minority both numerically as well as in terms of their position in greater socio-economic and political structure of the country. They constitute one of the most backward sections of the Indian society, along with the Buddhists, Scheduled castes, Scheduled tribes etc., in terms of both the educational spread and quality of performance. They are characterized by socially backward, economically poor and politically powerless indicators (Siddiqui, 1998; Yoginder, 2008 and Mainuddin, 2010).

The Sachar Committee (2009) noticed that the literacy rate among Muslims

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was far below the national average. One-fourth of Muslim children in the 6-14 year age group have either never attended school or dropped out from the schools. The expansion of educational opportunities since independence has not led to a convergence of attainment levels between Muslims and all others. Dropout rates among Muslims are higher at the primary, middle and higher secondary levels. Almost 3% of Muslims among the school-going children go to madarshas and there is a dearth of facilities for learning Urdu there. The states should work out some mechanisms whereby madarshas can be linked with a higher secondary school boards so that students wanting to shift to a regular mainstream education can do so after having passed out from madarshas. Recognition of the Madarsha degrees for eligibility in competitive examinations is desirable. The disparity in graduation attainment rates is widening since 1970s between Muslims and all other categories in both urban and rural areas. In premier colleges only one out of 25 under-graduate students and one out of 50 post-graduate students are Muslims respectively. Unemployment rate among Muslim graduates is also the highest among all socio-religious communities.

The Sachar Committee further found that Muslim parents are not averse to mainstream education or to send their children to affordable Government schools. But the access to government schools for Muslim children is limited. There is non-availability of schools within the easy reach for girls at lower levels. Absence of girls' hostels and female teachers are also the impeding factors. There is a clear and significant inverse association between the proportion of the Muslim population and the availability of educational infrastructure in small villages. Muslim concentrated villages are not well served with supporting infrastructural facilities, viz., pucca approach roads or local bus stops. The concentration of Muslims in the areas lacking infrastructural facilities implies that a large proportion of the community is without access to basic services both in urban and rural areas.

In this context, it may be noted that the Presidential Order of 1950 is in consistent with Article 14, 15, 16 and 25 of the Constitution (1950) that guarantee, "equality of opportunity, freedom of conscience and protect the citizens from discrimination by the State on grounds of religion, caste or creed".

Unfortunately, the Muslim community exhibits deficits and deprivation practically in all dimensions of development. Mechanisms to ensure equity and equality of opportunity to bring about inclusion should be such that diversity is achieved and at the same time the perception of discrimination is eliminated. Creation of a National Data Bank (NDB) for maintaining all relevant data for various socio-religious Communities has been recommended along with an autonomous 'Assessment and Monitoring Authority' to evaluate the extent of

development benefits which accrue to different socio-religious communities through various programmes. The idea of providing certain incentives to a diversity index should be explored.

The teachers who are the main architect of the society should be sensitized towards the needs and aspirations of Muslims and other marginalized communities. The Sachhar Committee (2009) recommended for promoting and enhancing all sorts of access to Muslims. The real need is of policy initiatives that can improve the participation and share of the minorities, particularly Muslims in the main stream lives of the country.

### ***West Bengal Scenario***

As per the Census Report 2011, the State of West Bengal occupies the third position among various states and union territories of the country in terms of percentage of Muslim population, after Jammu & Kashmir and Assam. The Muslim population in West Bengal formed 25.25% of the total State population (9.13 crores) and 14.64% of the country's total Muslim Population. In West Bengal, 83.22% of the Muslim population lives in rural areas and only 16.78% in urban areas. Geographically, Muslims are unevenly distributed throughout the State.

The literacy rate in West Bengal reveals an upward trend, which is now 76.26%. Of that, male literacy stands at 81.69% while female literacy is at 66.57%. It is found that highest literacy rate is in the district of East Medinipur (87.66%) which is squarely highest both in urban (89.14%) and rural (87.47%) areas. The lowest rates are found in the district of North Dinajpur both in total (60.13%) and in rural (57.15%) areas. But in the district of Murshidabad, the urban population shows the poorest literacy rate (72.65%). Inter-districts variation in literacy rates has a natural impact on the elementary education of the State. The inter-district enrolment status of primary schools in West Bengal shows that in connection with NER (99.95%) and also in respect to number of 'out of school children' (5+ to 8+), Nadia (200) is the best district. On the other hand, on the same criteria, North Dinajpur district is the poorest (NER: 93.92%; No. of 'out of school children': 13477). The highest and lowest GERs are found in Jalpaiguri (150.95%) and Kolkata (115.14%) respectively.

Similarly, the inter-district enrolment status of upper primary schools reveals both the lowest NER (76.50%) and GER (94.12%) are in the district of North Dinajpur. But the highest NER and GER are found in Hugli (96.15%) and West Medinipur (113.54%) districts respectively. In respect to number of 'out of school children' (9+ to 13+), lowest and highest districts are Nadia (1115) and Murshidabad (17297) districts respectively.

It also indicates that a total of 609 government recognised Madrasahs with

4,43,822 students are running in the State. The highest number of madrashas and highest enrolments are found in the district of Murshidabad, a traditional centre of Islamic education in the State. madrashas are also available in each district of the State. The minimum number (05) of madrashas is found in Darjeeling and Puruliya districts.

The highest share of Muslim population with 63.67% is found in the district of Murshidabad while the district of Darjeeling has the lowest share with 5% of total population. Three clusters of districts can be categorized according to the concentration of Muslim population with the help of their mean and standard deviation, it may be considered that the districts where the concentration is 33% or more of the total population as 'High Muslim Concentrated (HMC) Districts'. HMC districts are found Murshidabad (63.67%), Maldah (49.72%), North Dinajpur (47.36%), Birbhum (35.08%) and South 24 Parganas (33.24%) forming a continuous region of almost in the middle part of the State. Further, districts where the Muslim population is 17% or less of the total population may be considered as 'low Muslim Concentrated (LMC) Districts' which are found in two notable regions in the State, Jalpaiguri (10.85%) and Darjeeling (5.31%) in the northern part, and Hugli (15.14%), East & West Medinipurs (11.33%), Bankura (7.51%) and Puruliya (7.12%) in the south-western part of the State. Muslim population ranging from 17% to 33% of the total population is considered as the 'Medium Muslim Concentrated (MMC) Districts' which includes the districts of Nadia (25.41%), Haora (24.44%), Koch Bihar (24.24%), North 24 Parganas (24.22%), South Dinajpur (24.02%), Kolkata (20.27%) and Bardhaman (19.78%). Demographic concentration of Muslims in this might play a significant role in socio-economic and educational development in the state (Ed. CIL, 2011).

In the context of above discussions, the goal of the present study was identified as determining the present status of the elementary education of the Muslim children in the Muslim predominant areas of West Bengal, especially as the impact of SSA.

### ***Objectives***

1. To find out the enrolment status of Muslim students in the Elementary level in the Muslim predominant areas of West Bengal
2. To find out the status of gender parity among the enrolled Muslim students in general Schools and madrashas at the Elementary level
3. To find out the nature of increase in enrolment among the Muslim students in the Elementary level
4. To find out the status of school-leaving and dropout rates of Muslim students in the Elementary level

5. To find out the reasons behind the long and frequent absence in classes and dropping out from general schools
6. To find out the status of beneficiaries of different facilities availed by the Muslim students at the elementary level.

### Methods

#### Study Design:

The methodology was based on collecting and analysing both the primary and secondary data. While the primary data has been collected from sample survey through the schedules designed for the study, the secondary data has been collected from the office records, documents, progress reports, other research reports etc.

#### Sample:

As a part of the national study, in West Bengal, three Districts were randomly selected from HMC and MMC districts where Muslim populations were found predominant with one-fourth or more of the total population, viz., Birbhum, Koch Bihar and North 24 Paraganas. From the selected Districts, 11 CD Blocks out of 341 and nine CD Municipalities out of 120 were selected at random where Muslim populations were more than 33% total population. In the same way, 115 villages and 45 Municipal Wards were selected where at least 50% of the total populations were Muslims. Finally, from the selected villages Municipal wards, 104 primary schools including nine primary madrashas and 66 upper primary schools including nine high madrashas of the same level were selected as sample of the study. The sample was drawn for collecting concerned data according to the objectives of the study. The distribution of the sample is given in Table 1.

**Table 1 : Sample Selection**

District	Locality	Block/ Municipality	Village/Ward	Elementary Schools	
				Primary	Upper Primary
Birbhum	Rural	4	40	25 (3)	15 (2)
	Urban	3	15	9 (0)	9 (2)
Koch Bihar	Rural	3	40	25 (4)	15 (2)
	Urban	3	13	10 (0)	8 (0)
N. 24 Pgns.	Rural	4	35	25 (2)	10 (2)
	Urban	3	17	10 (0)	9 (1)
Total		11 Blocks & 09 Municipalities	115 Villages & 45 Wards	104 (09)	66 (9)

Note : The figures within parentheses indicate number of Madrashas included.

### *Tools*

Two questionnaires, Schedule I and Schedule II, for collecting data from primary level and upper primary level general schools and madrasahs respectively were developed to collect data according to the objectives of the study.

### *Results*

On the basis of primary data collected through the schedules, following tables were developed according to the objectives of the study.

To find out the enrolment status of Muslim students in the elementary level, Tables 2 and 3 were developed. Table 2 indicates that during the 2010-11 academic session, at the primary level out of a total of 10026 students enrolled in the primary level girls were almost 55.55% and that was 9.10% point higher than the number of enrolled boys (45.45%). The total Muslim students were almost 73.60% and girls shared about 56.44% of them. The highest % of girls enrolment was found in North 24 Paraganas district (64.45%) and that of lowest in Birbhum (45.85%). The percentage of enrolled Muslim girls in respect to Muslim students was found highest in Koch Behar (51.84%) and that of lowest in Birbhum (45.02%). The overall growth in enrolment status from 2009-10 to 2010-11 was found 26.51% and that was highest in North 24 Paraganas (72.22%) and lowest in Koch Behar (2.93%). Similarly, overall Muslim girl enrolment rate was 52.50% and that was highest and lowest in North 24 Paraganas (133.70%) and Koch Behar (4.12%) respectively. It was further revealed that almost 9.02% of students were dropped out and that of Muslim girls were 7.23% (out of Muslim students). But, no drop-out was noticed in the Birbhum district.

Table 3 represents the enrolment status of upper primary level. It was found that the total enrolment was slightly decreased in 2010-11 in comparison to last year and that was lower for girl students. The overall enrolment of Muslim students was found 53.12%, out of which Muslim girls were 38.15% and out of total Muslim girl students were 71.81%. The highest rate of Muslim student enrolment was found in North 24 Paraganas (79.68%) and that of lowest in Koch Behar (46.02%). The enrolment of Muslim girl students in respect to Muslim students, the highest was found in North 24 Paraganas (65.66%) and lowest in Koch Behar (49.95%). The overall drop-out was found 7.22% and that of highest in Koch Behar (16.83%) and lowest in Birbhum (0%) respectively.

**Table 2 : Status of Students Enrolled at Primary Stage**

District	Year	Item	Total		Muslim	
			Total	Girls	Total	Girls
Birbhum	2009-10	(a) Total enrolment at primary stage as on 30.9.09	2749	1264	1923	886
		(b) No. of students who left school out of (a) before 30.9.10 excluding those who left after passing class 5	07	03	05	03
		I No. of students out of (b) about whom no information is available	02	00	02	00
	2010-11	(a) Total enrolment at primary stage as on 30.9.10	2885	1323	2077	935
		(b) No. of students who left school out of (a) before 30.9.11 excluding those who left after passing class 5	00	00	00	00
		I No. of students out of (b) about whom no information is available	00	00	00	00
Koch Behar	2009-10	(a) Total enrolment at primary stage as on 30.9.09	2559	1322	1600	836
		(b) No. of students who left school out of (a) before 30.9.10 excluding those who left after passing class 5	163	73	122	301
		I No. of students out of (b) about whom no information is available	89	42	46	54
	2010-11	(a) Total enrolment at primary stage as on 30.9.10	2634	1339	1711	872
		(b) No. of students who left school out of (a) before 30.9.11 excluding those who left after passing class 5	841	213	367	284
		I No. of students out of (b) about whom no information is available	147	70	112	50

North 24 Paraganas	2009-10	(a) Total enrolment at primary stage as on 30.9.09	2617	1342	1946	1009
		(b) No. of students who left school out of (a) before 30.9.10 excluding those who left after passing class 5	75	36	31	13
		I No. of students out of (b) about whom no information is available	07	03	01	01
	2010-11	(a) Total enrolment at primary stage as on 30.9.10	4507	2905	3591	2358
		(b) No. of students who left school out of (a) before 30.9.11 excluding those who left after passing class 5	64	34	30	17
		I No. of students out of (b) about whom no information is available	06	04	04	03
Total	2009-10	(a) Total enrolment at primary stage as on 30.9.09	7925	3828	5469	2731
		(b) No. of students who left school out of (a) before 30.9.10 excluding those who left after passing class 5	245	112	158	317
		I No. of students out of (b) about whom no information is available	98	45	49	55
	2010-11	(a) Total enrolment at primary stage as on 30.9.10	10026	5567	7379	4165
		(b) No. of students who left school out of (a) before 30.9.11 excluding those who left after passing class 5	905	247	397	301
		I No. of students out of (b) about whom no information is available	153	74	116	53

The Table 4 indicates the status of enrolment ratio in respect to child population of the locality in two age-groups, viz., 6-10 years and 10 to 14 years. It was found that the ratios of girl students were better for the primary level (6-10 years) in every district and also in total. But at the upper primary level (10-14 years), ratios of boys were found better in all the districts.

**Table 3 : Status of students enrolled at Upper Primary Stage**

District	Year	Item	Total		Muslim	
			Total	Girls	Total	Girls
Birbhum	2009-10	(a) Total enrolment at upper primary stage as on 30.9.09	1878	1017	1183	691
		(b) No. of students who left school out of (a) before 30.9.10 excluding those who left after passing class VIII	04	00	04	00
		I No. of students out of (b) about whom no information is available	00	00	00	00
	2010-11	(a) Total enrolment at upper primary stage as on 30.9.10	2209	1166	1468	835
		(b) No. of students who left school out of (a) before 30.9.11 excluding those who left after passing class VIII	01	01	01	01
		I No. of students out of (b) about whom no information is available	00	00	00	00
Koch Behar	2009-10	(a) Total enrolment at upper primary stage as on 30.9.09	4568	1818	2253	1015
		(b) No. of students who left school out of (a) before 30.9.10 excluding those who left after passing class VIII	691	354	351	171
		I No. of students out of (b) about whom no information is available	32	08	20	00
	2010-11	(a) Total enrolment at upper primary stage as on 30.9.10	4163	1708	1916	957
		(b) No. of students who left school out of (a) before 30.9.11 excluding those who left after passing class VIII	701	347	395	189
		I No. of students out of (b) about whom no information is available	18	02	13	02

Ghosh

North 24 Paraganas	2009-10	(a) Total enrolment at upper primary stage as on 30.9.09	4508	2945	3536	2380
		(b) No. of students who left school out of (a) before 30.9.10 excluding those who left after passing class VIII	375	236	355	226
		I No. of students out of (b) about whom no information is available	86	51	66	40
	2010-11	(a) Total enrolment at upper primary stage as on 30.9.10	4507	2905	3591	2358
		(b) No. of students who left school out of (a) before 30.9.11 excluding those who left after passing class VIII	84	52	65	40
		I No. of students out of (b) about whom no information is available	14	20	13	07
Total	2009-10	(a) Total enrolment at upper primary stage as on 30.9.09	10954	5780	6972	4086
		(b) No. of students who left school out of (a) before 30.9.10 excluding those who left after passing class VIII	1070	590	710	397
		I No. of students out of (b) about whom no information is available	118	59	86	40
	2010-11	(a) Total enrolment at upper primary stage as on 30.9.10	10879	5779	6975	4150
		(b) No. of students who left school out of (a) before 30.9.11 excluding those who left after passing class VIII	786	400	461	230
		I No. of students out of (b) about whom no information is available	32	22	26	09

**Table 4 : Ratio of Enrolment for Classes I-IV and V-VIII to the Respective Child Population of the Locality in the Age-groups 6 to 10 years and 10 to 14 years**

District	Age-group 6 to below 10 years (Classes I-IV)						Age-group 10 to below 14 years (Classes V-VIII)					
	Muslims			Non-Muslims			Muslims			Non-Muslims		
	Boys	Girls	Gender ratio	Boys	Girls	Gender ratio	Boys	Girls	Gender ratio	Boys	Girls	Gender ratio
Birbhum	69.06	73.59	100.37	94.83	89.36	127.04	63.24	57.65	70.56	62.80	57.96	91.02
Koch Bihar	69.27	72.99	82.79	81.92	85.50	91.44	85.78	65.11	88.03	84.85	61.01	97.09
N. 24 Prgns	40.51	41.03	128.17	80.19	86.74	184.43	58.33	57.65	91.25	64.69	63.70	90.28
Total	59.61	62.53	103.78	85.65	87.20	134.43	69.12	60.14	83.28	70.78	60.89	92.79

(1) Ratio of Enrolment for Classes I-IV =  $100 \times (\text{Enrolment in Classes I-IV} / \text{Child population in the age-group 6 to below 10 years})$ ;

(2) Ratio of Enrolment for Classes V-VIII =  $100 \times (\text{Enrolment in Classes V-VIII} / \text{Child population in the age-group 10 to below 14 years})$ .

The status of gender parity of the enrolled students in General schools and madrashas at the elementary level is given in Table 5. In the primary level, it was found that the total gender parity ratio was 97.66 in general schools of which 94.55 were for Muslims. On the other hand, the total gender ratio in madrashas was found 14.30. The best gender ratio in primary level was found in N.24 Paraganas (98.90) among Muslims in general schools and that was worst in Koch Behar (87.64). Among the madrashas, that was also found best (16.79) in North 24 Paraganas and worst (11.24) in Koch Behar. At the Upper primary level, the overall gender ratios among the Muslim students were 93.58 and 15.83 in general schools and madrashas respectively. The best gender ratios among Muslims were found in Koch Behar (97.36) in general schools and madrashas in Birbhum (16.94). That was found worst in N 24 Paraganas (88.36) and in Birbhum (13.66) in general schools and madrashas respectively.

**Table 5 : Gender Parity on Enrolment in General Schools and Madrasshas**

		Gender Parity on Enrolment			
		Primary Level		Upper Primary Level	
District	Category	General School	Madrasha	General School	Madrasha
Birbhum	Total	96.30	12.06	99.48	15.87
	Muslims	93.60	11.24	93.45	16.94
	Non-Muslims	97.69	15.84	99.28	8.99
Koch Bihar	Total	96.68	11.39	95.29	10.34
	Muslims	87.64	12.03	97.36	13.66
	Non-Muslims	99.22	10.33	94.67	0.00
N.24 Pgs.	Total	98.91	17.42	90.28	15.59
	Muslims	98.90	16.79	88.36	15.92
	Non-Muslims	99.01	22.74	90.87	8.74
Total	Total	97.66	14.30	93.50	14.68
	Muslims	94.55	14.23	93.58	15.83
	Non-Muslims	98.76	9.11	93.47	6.26

Note : Gender Parity = (No. of girls / No. of boys) X 100.

**Table 6 : Percentage increase in Intake in Class I (Muslims & Non-Muslims) between 2010 & 2011**

District	Category	Class I intake in primary schools		% increase between 2010 & 2011	Class-V intake in upper primary schools		% increase between 2010 & 2011
		2010	2011		2010	2011	
Birbhum	Muslims	1119	1290	15.23	848	1109	0.31
	Non-Muslims	453	380	-0.16	397	458	0.15
Koch Behar	Muslims	1043	1021	-0.02	998	943	-0.06
	Non-Muslims	490	527	0.08	1218	1166	-0.04
N.24 Pgs.	Muslims	1141	1084	-0.08	1553	1550	-0.002
	Non-Muslims	520	486	-0.07	413	397	-0.04
Total	Muslims	3303	3395	0.03	3399	3602	0.06
	Non-Muslims	1463	1393	-0.05	2028	2021	-0.003

Note : Intake in Class I = (Enrolment – Repeaters) in Class I.

**Table 7 : Percentages of School leavers and dropouts  
at the Elementary level in 2009-10 and 2010-11**

District	Level	Year	% of school leavers*				% of dropouts**			
			Muslims		Non-Muslims		Muslims		Non-Muslims	
			Total	Girls	Total	Girls	Total	Girls	Total	Girls
Birbhum	Primary	2009-10	0.04	00	0.04	00	00	00	00	00
		2010-11	00	00	00	00	00	00	00	00
	Upper Primary	2009-10	0.21	00	0.21	00	00	00	00	00
		2010-11	0.05	0.05	0.05	0.05	00	00	00	00
Koch Bihar	Primary	2009-10	15.33	11.67	11.10	10.46	47.14	36.50	37.36	35.93
		2010-11	14.61	12.77	8.07	8.37	44.33	37.36	33.19	35.16
	Upper Primary	2009-10	29.87	36.60	23.85	42.09	1.81	0.88	1.14	00
		2010-11	42.56	43.13	23.04	46.71	1.37	0.38	0.40	00
North 24 Paraganas	Primary	2009-10	0.07	0.11	0.32	00	5.50	4.21	13.97	17.81
		2010-11	0.55	0.76	0.50	00	4.75	5.25	8.44	7.91
	Upper Primary	2009-10	21.26	21.02	5.54	4.43	37.31	14.18	43.76	61.72
		2010-11	3.70	3.47	5.02	5.15	42.15	20.93	36.39	55.91
Total	Primary	2009-10	5.14	3.93	4.62	4.29	21.58	13.57	17.11	17.94
		2010-11	3.27	4.51	2.85	2.95	17.16	14.20	17.21	17.95
	Upper Primary	2009-10	17.28	19.20	9.87	15.61	13.04	11.37	14.97	20.81
		2010-11	15.44	15.84	9.37	17.31	9.84	13.59	28.93	28.63

\* % of school leavers =  $100 \times \{\text{No. of students who left school (b)} / \text{Total enrolment at primary stage (a)}\}$ ;

\*\* % of dropouts =  $100 \times \{\text{No. of students about whom no information is available (d)} / \text{Total enrolment at Primary stage (a)}\}$ .

In connection with the objective to find out the nature of increase in enrolment among the Muslim students in the Elementary level is presented in Table 6. It was revealed that overall increase among the Muslim students in respect to 2010 and 2011 in connection with new intake in class I was only 0.03% and that was maximum (15.23%) in Birbhum, but the increase rate was found negative in Koch Behar and North 24 Paraganas districts. Similarly, at the upper primary level, the overall increase rate among the Muslim students in class v was only 0.06% and that was found highest (0.31%) in Birbhum, but in other districts the increase rates were found slightly negative.

The status of school-leavers and drop-outs especially among the Muslim students at the elementary level has been given in Table 7. It indicates that % of school-leavers among the Muslim students including have been mostly decreased both in the Primary and Upper Primary levels. Though the overall situation is low but the situation was found worst in Koch Behar district particularly among the Muslim girl students in the upper primary level. In spite of the 'no detention' educational policy of the Government, the drop-out scenario is found alarming both in primary and upper primary levels in Koch Behar and North 24 paraganas districts. The situation is found still worst among girls students both for Muslims and Non-Muslims though it is gradually deceasing.

**Table 8 : Main Reasons of Long or Frequent Absence of Students in General School**

Category of students	Schools gave reasons for absence of children as						Total
	Parents lack of interest in the children's school attendance	helping parents in their occupation	Students' involvement in household work/ taking care of younger brother/sister	Participation in religious and social functions	Family migrating to other place in search of work	Others	
For all students	29.78%	21.04%	21.67%	16.67%	7.38%	3.82%	366 (100%)
For Muslim boys	22.73%	17.27%	12.73	30.91	10.09%	6.36%	110 (100%)
For Muslim girls	30.19%	11.43%	19.81%	26.41%	8.49%	3.77%	106 (100%)

In connection with the objective to find out the reasons behind the long/ frequent absence in classes and dropping out from general schools, especially among the Muslim students, data were tabulated in Tables 8 and 9 respectively. Table 8 shows that parents' lack of interest is the main reason for long or frequent absence for Muslim girls and boys. Apart from that Muslim students remain absent from their classes to participate religious and social functions. Table 9 reveals that main two reasons are (i) child's requirement to help parents in family occupation and income generating activity and (ii) child's need to help domestic activity and caring siblings.

**Table 9 : Main Reasons of Dropping out of Students from General Schools (2010-11)**

Reason of dropping out	Children in Primary Schools				Children in Upper Primary Schools			
	All		Muslim		All		Muslim	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Child needed to help parents in their occupation or income generating activity	513	438	472	317	124	38	96	25
Child needed to help in domestic work and care of siblings	127	342	85	287	59	52	43	37
Lack of parental interest in studies	11	18	07	12	37	71	29	56
Early marriage	00	47	00	43	00	147	00	138
No facility for teaching Urdu	04	00	01	00	02	00	02	00
School being far from home	00	07	00	04	00	28	00	23

**Table 10 : Beneficiaries of Different Facilities among the Muslim and Non-Muslim Students at the Elementary Stage in General Schools (2010-11)**

District	Students	Level	Free textbooks		Free uniform		Scholarships		Escorts		Hostels	
			Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Birbhum	% of Muslims	Pri	98.40	98.50	6.30	88.84	2.64	22.24	00	00	00	00
		U. Pri	94.32	95.00	00	95.02	4.56	63.25	00	00	00	00
	% of Non-Muslims	Pri	98.58	99.01	7.10	91.92	21.56	26.48	00	00	00	00
		U. Pri	98.16	98.01	00	95.65	5.12	73.67	00	00	00	00
Koch Behar	% of Muslims	Pri	88.26	95.01	5.20	82.69	1.98	28.94	00	00	00	00
		U. Pri	93.03	95.01	00	90.06	3.90	52.89	00	00	00	00
	% of Non-Muslims	Pri	92.00	96.03	6.19	89.50	24.76	23.38	00	00	00	00
		U. Pri	97.00	97.00	00	94.03	5.26	53.13	00	00	00	00
N. 24 Pgs	% of Muslims	Pri	89.60	96.40	8.80	82.76	2.08	23.17	00	00	00	00
		U. Pri	95.19	96.21	00	93.67	4.79	54.10	00	00	00	00
	% of Non-Muslims	Pri	95.00	97.30	7.60	83.41	26.34	24.68	00	00	00	00
		U. Pri	96.27	96.94	00	94.41	5.36	44.79	00	00	00	00
Total	% of Muslims	Pri	92.29	96.81	5.40	84.80	2.24	24.78	00	00	00	00
		U. Pri	94.49	95.58	00	92.23	4.53	56.75	00	00	00	00
	% of Non-Muslims	Pri	95.06	97.37	5.13	86.98	22.11	24.85	00	00	00	00
		U. Pri	96.83	97.18	00	94.59	4.75	57.20	00	00	00	00

**Note:** % of Muslims = 100 X (No. of Muslim beneficiaries/Enrolment of Muslims at primary stage); Similarly, % of Non-Muslims = 100 X (No. of Non-Muslim beneficiaries/Enrolment of Non-Muslims at primary stage).

The status of beneficiaries of different facilities availed by the Muslim students at the elementary level is given Table 10. It reveals that Muslim and Non-Muslim students availed the free textbook facilities in the same way. But in respect to free uniform and scholarship facilities both the Muslim and Non-Muslim girls availed more facilities than the boys.

### ***Conclusion***

The present study mostly supports the previous studies of Hasan (2014), Mainuddin (2010) and Jawaaid, et.al. (2007) that inter religious inequality exists in terms of literacy and educational backwardness is the key-factor for responsible for social, cultural and economic backwardness though Muslims have, in many ways, made significant contributions to the art, culture, politics, economic activities etc. for the progress of the nation. According to Siddiqui (1998), in general, education plays an important role in influencing the quality of human resources, but it is most important for the backward sections as it is the media of exchanging ideas, thoughts and beliefs over time and space. The relative backwardness of the Muslim community and particularly of Muslim women has been noted as a factor of comparatively high fertility rates observed among the Muslim population (Patel & Leonard, 2012). Thus, only proper education can break through the social change and socio-cultural advancement by enhancing potentialities through achieving modern knowledge, skill and information and technology. Illiteracy or poor quality of education may, generally, be assumed as the root cause of lower development. Here lies the role of the Government. No country in the world had been able to educate all its children without state intervention (Dreze & Sen, 2002). The status of Muslim elementary students in Muslim predominant areas of West Bengal revealed in the present study that due some planned measures taken by the Government the scenario is gradually changing in a positive way. But there is no scope of complacency, we have to take the bigger steps in this regard as Mahatma Gandhi had said, "The claim of a country's civilization depends upon the treatment to the minorities."

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## Students' Manifestation of the Relationship with Mathematics

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*Prabir Ghosh\* and Aditi Ghose\*\**

### Abstract

*This study examines the manifestation of the relation with mathematics of Under Graduate college students during their school years. A questionnaire was constructed and administered on a sample of 414 Under Graduate students from Kolkata and its suburbs. Subsequent analysis revealed that manifestation of the relation with mathematics does not differ gender wise but differs according to students' subject groups. Unpredictably, students in the Language group recall the best manifestation of the relation with mathematics, while Science and Commerce groups do not reminisce quite so positively. This is possibly because the students of the Language group have been freed of the 'demands' of mathematics.*

**Key Words :** *Manifestation, Mathematics, Gender, Subject groups.*

### Introduction

Mathematics has many applications in the modern world. In fact, without mathematics it would be impossible to get on in any aspect of life and knowledge that is acquired in all fields is intricately entwined with mathematics. Mathematics helps us to understand and expand on fundamental as well as the specifics of different subjects. Its presence is, in particular, in the realms of higher education and research. The usage of mathematics can be direct as in the case of Physics, or it can be rather more application oriented as in the case of Social Sciences. The latter usually pertains to statistics. In fact, many subjects that are popularly deemed to be non-mathematical take on the garb of mathematics at the more advanced level. Examples of the latent use of mathematics may be seen in diverse subjects like Music, Education, Sociology, Political Science etc.

Though mathematics is a highly useful subject, its image, in popular perspective, is often very intimidating (Leder, G.C. & Forgasez, H.J. (2010). Mathematics is a compulsory subject up to the Secondary school level and

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proficiency in it is used as a sieve for separating students into different subject areas and vocations. The implication of this is that mathematics becomes the gateway to opportunities which are denied to those who are not proficient in it. Further, the abstract nature of mathematics is not usually softened in concrete term, so that students often fail to savour its beauty, meaning and significance. As a result, many students develop mathematics phobia (Gale, T. 2006) or invent avoidant techniques regarding mathematics.

Once the limitations of school are over, students have the option of following which ever line of study suits them best. A certain type of students may have developed an affinity towards mathematics and they tend to choose subjects which are overtly mathematical. For example, they can choose engineering or any of the Physical Science subjects at the Under Graduate level. Another type of students may not like mathematics too much, but they feel a compulsion to come to grips with it so that they can satisfy their particular ambitions. A third type of students comes to Under Graduate College with a set mentality of aversion towards mathematics. They want to avoid mathematics and take up subjects which they assume to be exclusive from mathematics. Unfortunately, as discussed above, no subject, in contemporary terms, is devoid of mathematical thought and usage. The students soon come to realize this and grapple with the mathematics content of their study. This negative mind set further obstructs their success and often results in frustration.

There is, therefore, a need to attain a complete perspective regarding this situation, i.e., the extent and nature of Under Graduate students' relationship with mathematics. A full understanding of this situation may lead to corrective measures in teaching mathematics at school and college, and elaborating on its attraction and relevance for the student. The investigator therefore examined Under Graduate students' relationship with mathematics with respect to its manifestation of these as reflected in the students' behaviours. Further, these attributes were compared among students who have taken up different areas of study, i.e., Physical Science, Life Science, Social Science and Languages. The hypotheses proposed for the study are as follows:

H<sub>0</sub>1: There is no difference in the manifestation of the relation with mathematics between students of different subjects.

H<sub>0</sub>2: There is no gender wise difference in the manifestation of the relation with mathematics among students.

### ***Method***

#### ***Sample***

As students from Under Graduate colleges of the University of Calcutta and West Bengal State University approximate similar cultures and study back-

grounds, they are collectively taken to be the population for generalisation of the study. The sample for the study thus comprised of students in Under Graduate general colleges affiliated to University of Calcutta and West Bengal State University. The sample table : was purpose. It is indicated in the following.

**Table 1 : Distribution of participants in various subject groups**

Subject groups/Gender	1	2	3	4	Total
Boys	16	29	55	35	125
Girls	12	21	81	175	289
Total	18	50	136	210	414

The subject groups of study are symbolized by the numbers as shown below:

**Table 2 : Subject Groups of study**

Subject Groups	Subject in Groups	Subject Groups in Number
Language	Bengali, English, Sanskrit, Hindi	1
Science	Mathematics, Physics, Biology, Chemistry, Computer Science, Botany, Zoology, Geography	2
Commerce	Accountancy	3
Social Science	Political Science, Philosophy, Education, Sociology, History	4

### ***Tool***

The tool consisted of a questionnaire entitled *Student' Manifestation of the Relationship with Mathematics* for assessing students' manifestation of the relationship with mathematics in the past (in school) as well as in the present course of study. Cognitive, affective and behavioural manifestations of the relations with mathematics were sought. The structure of the questionnaire evolved around the following situations :

- Examination situation—situation arising just prior to and during examinations, with regard to preparation, lack of fear/confidence, not anxious/panicky/confidence
- Classroom situation—situations arising in class, with regard to understanding, interest/confidence, overcoming fear, obedience/disruptiveness
- Self-study situation—situation arising during study outside the class, with regard to ability, liking/disliking, confidence, eagerness/avoidance, determination

- Discipline oriented situation—situation arising due to study of mathematics in the present class, with regard to understanding and ability, preference/avoidance, confidence, attendance/avoidance, effort/ lack of effort. (Here discipline refers to the subject of Under Graduate study).

The items for the questionnaire were constructed by identifying positive and negative statements for each type of situation. The scoring principles are shown in Tables.

**Table 3 : Scoring Principles of Response**

Response	Positive Statement	Negative Statement
Strongly Agree	5	1
Agree	4	2
Indifferent	3	3
Disagree	2	4
Strongly Disagree	1	5

The questionnaire was validated by three experts. The reliability of the questionnaire was measured by the test-retest method, with a gap of 1 month between the test and the retest. The sample for this operation consisted of 230 subjects of similar attributes as the sample of study. The test-retest correlation was significant at 1% level.

### Results

The questionnaire was administered on the sample and the responses were scored accordingly. The Mean and Standard Deviation of the scores have been tabulated and represented in Table 4.

**Table 4 : Means and Standard Deviation of the scores**

Gender	Subject	Mean	Standard Deviation	N
Boys	1	145.33	6.377	6
	2	135.59	36.221	29
	3	136.15	18.733	55
	4	121.00	20.481	35
	Total	132.22	24.881	125
Girls	1	140.00	20.666	12
	2	115.05	22.076	21
	3	130.93	18.538	81
	4	125.91	21.884	175
	Total	127.11	21.388	289
Total	1	141.78	17.176	18

2	126.78	32.457	50
3	133.04	18.725	136
4	125.10	21.687	210
Total	128.65	22.592	414

*Observations* : Students in the Language groups recount a more positive manifestation of their relation with mathematics than students of all other subject groups. Social Science groups recount the least positive manifestation of their relationship with mathematics. The distribution of scores was tested for normality and found to be nearly normal. The means of the scores were compared gender wise and subject wise with the ANOVA technique as follows.

**Table 5 : Comparison of questionnaire C scores**

Source	Type III Sum of Squares	df	Mean Square	F	Significant
Gender	1726.425	1	1726.425	3.587	.059 N.S.
Subject	9928.767	3	3309.589	6.876	.000 Significant 1%
Gender×Subject	5702.820	3	1900.940	3.949	.009 Significant 1%

*Observations* : There is no significant gender wise difference in mean scores. Means scores differ significantly subject wise at 1% level. There is an interaction effect between gender and subject which is significant at 1% level. Subject wise differences being significant, the scores were further subjected to t-test as follows:

**Table 6 : Test of subject wise differences**

(I) Subject	(J) Subject	Mean Difference (I-J)	Standard Error	Significant
1	2	17.350	6.322	0.006**
	3	9.131	5.810	0.117
	4	19.210	5.849	0.001**
2	1	-17.350	6.322	01.006**
	3	-8.219	3.681	0.026
	4	1.860	3.742	0.619
3	1	-9.131	5.810	0.117
	2	8.219	3.681	0.026
	4	10.079	2.793	0.000**
4	1	-19.210	5.849	.001**
	2	-1.860	3.742	0.619
	3	-10.079	2.793	0.000**

\* Significant at 5% level, \*\* Significant at 1% level

*Observations:* The mean scores of the Language groups differ significantly from that of the Science and Social Science groups at 1% level. The mean scores of the Commerce group differ significantly from that of the Social Science group at 1% level. That is, the Language group's manifestation of their relationship with mathematics is better than that of the Science and Commerce groups, while the Commerce group's manifestation of their relationship with mathematics is better than that of the Social Science group.

### ***Interpretation***

Table 5 shows that there is a significant difference in the extent of positive manifestation of the relation with mathematics between students of different subjects. Therefore,  $H_01$  is rejected. That is, there is a significant subject wise difference in the manifestation of the relation with mathematics.

Table 5 also shows that there is no significant gender wise difference in the manifestation of the relationship with mathematics. Therefore,  $H_02$  is accepted. That is, there is no significant gender wise difference in the relationship with mathematics. This is in contradiction to the study by Nicole, Janet and Marcia in their meta-analysis of gender differences of mathematics which found males to have more positive mathematic attitudes (Else-Quest, N.M., Linn, M.C. & Hyde, J.S. 2010). However, by referring to the psychological theory of Eccles (1994) and Bandura (1986) it may be noted that girls perform as well as boys if they are sufficiently encouraged and mathematics is related to female proclivities. In India, Ravanan, Blessing and Julie, found there is no significant gender difference in attitude to mathematics of class eleven students of Trichy districts (Ravanan, R. Mary, A.B. & Julie. 2010). This supports the present finding.

Table 6 shows that there is a significant difference in the mean score of students in the Language group and students of Science and Social Science groups. Compared to both Science and Social Science groups, the Language group shows better manifestation of relation with mathematics. Moreover, students in the Commerce group show significantly higher manifestation of relation with mathematics than students of Science groups. In other words students in the Language groups recall the best form of manifestation of relation with mathematics. Though it is surprising, it can be accounted for by the lack of anxiety on the part of Language group students as they do not deal with mathematics in their academic activities. This probably accounts for their rosily reminisces of mathematics.

Table 5 shows that the interaction effect between gender and subject is significant. That is, gender wise differences vary according to the different subject groups. This, in fact, is evident in Table 4 where boys in the Social

Science group manifest the least positive relation with mathematics, while this is true for girls in the Science group.

The results thus indicate that students in the Language group manifest a better relationship with mathematics than those from other groups. While the extent of positive manifestation of relation with mathematics does not vary gender wise, it varies according to the present discipline being studied by the participants. These findings may be corroborated indirectly by referring to several findings related to gender differences in anxiety and anxiety related behaviour (Prevatt, F., Welles, T.I., Li, H. & Briley, P. 2010).

### ***Discussions***

The findings therefore reveal that the Language group relates more positively to mathematics than other groups and, in particular, the Science and Commerce groups. On superficial perusal, this appears to be contrary to expected findings. However, this finding could be attributed to nostalgia among those who have bypassed the obvious academic uses of the subject. The less than enthusiastic manifestation of mathematics reported by its obvious users, i.e., Science and Commerce students, may portray a reluctance to face what they consider to be work. On the other hand it may be the outcome of wrong career choices made more on the basis of social acceptability than true aptitude, interest and ability. That attitudes may be coloured by feelings has been shown by Hannula M. (2002). According to Hannula, attitudes are more dependent on emotions than on cognition. Because attitudes are important factors in students' constructions of mental representations, students of Science and Commerce belie their reluctance to use mathematics in their manifestation of the relation with the subject.

Pehkemen saw mathematical knowledge as consisting of both objective and subjective knowledge (Pehkenen, E. 2001). The former type of knowledge is about the general structure of mathematics accepted by the mathematical community. The latter is unique to the individual, and based on his/her personal experience and attainment. This subjective knowledge is affected by attitudes which can influence development in mathematics either in positive or negative ways. It is possible that the Language group students have, with maturity, realized the need for the unique form of knowledge in mathematics that they have missed out on.

The findings of this study also bust the myth of male superiority in mathematical approach and show that mathematics is seen no less positively by girls than by boys. Perhaps, given the same opportunities and social expectation, the achievement of girls may possibly not lag behind that of boys.

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## Syllabus of Mathematics in Elementary Education

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*Nimai Chand Maiti\*\*\**

### Abstract

*Mathematics education is a process by which a child enters into two basic regions of the mathematical world; into concepts and theories on one side and mathematical activity on the other. Such initiatives, fostered and made easier by curriculum, take place within a well knit system of education. Having long sought to universalize of elementary education, national government and international organizations began focusing on educational quality and learning outcomes. India is being a vast division-riven country; the central challenge to Indian education is dealing with the metaphorical triangle of quantity, quality and equality. After NCF 2005, a change in the syllabi and text books and a change in classroom teaching and assessment are taking place slowly at different levels of maturity across the states. In this context, the present paper attempts to compare the syllabus of mathematics of classes 6-8 of CBSE, ICSE and WBBSE. Keeping in mind the world wide strategy for renewal process in curriculum for quality education in mathematics, the paper compares also the syllabus and teaching method of mathematics of grade 6-8 of some other countries viz., USA, Singapore and Hong Kong. It is observed that in Singapore at P-5 & P6 (Primary class 5 & 6) and secondary stage every child in school does mathematics that is suited to his/her ability. "Mathematics for all but more mathematics for some" is the motto of Singapore mathematics education. ICSE and CBSE syllabus of mathematics of class 6-8 is almost similar to the USA syllabus of mathematics of grade 6-8 but in WBBSE syllabus of mathematics probability, functions, volume and surface area are not taught up to class VIII.*

**Key Words :** *Elementary Education, Comparison of Mathematics Syllabus*

### Introduction

Mathematics is embedded deeply into the life and culture of people in the Indian subcontinent, attested by a long history of engagement with mathematics in art, craft, work and abstract disciplines of thought. This has also meant a tradition

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of socially embedded modes of education and learning in aspects of mathematics as well (Subramaniam and Ramanujam, R. 2012). Mathematics influences and gets influenced by the developmental process of a society. There is hardly any field of activity or sector of development which is not influenced by mathematics in some form or other. Mathematics provides a broad guideline to streamline educational process and reflect the current needs and aspiration of society. In recent times, elementary education has emerged as an important segment of the total educational system expected to contribute significantly to the individual as well as the national development process. In order to be effective, school education needs to be continuously reviewed and updated. In fact school curriculum is the root of the renewal process. Renewal takes place on the basis of feedback provided by researches conducted from time to time.

### ***Perspectives of Mathematics Education in India***

With the Right to Education legislated by the Indian Parliament in recent years, universalization of elementary education is becoming an imminent reality. On the other hand, the need for strengthening mathematics education at school level is acknowledged by all policy planners. The Zakir Hossain Committee in 1937 saw it in relation to work. In the 1950s and the 1960s, India developed its mathematics education as a step towards industrialization and scientific research. The Kothari Commission (1964-66) emphasized the importance of children learning mathematics for the development of science and technology and for industrial growth. Therefore, mathematics is in a prominent position in elementary education. The NPE 1986 saw it as a 'vehicle to train a child to think, reason, analyze and to articulate logically.' However the shape of mathematics education has largely remained the same over the last 50 years. In response to global curricular process, in India too there has been considerable curricular acceleration in school mathematics. The National Curriculum Framework (NCF 2005) responded to this and guided the development of new curricula and textbooks based on how children actively construct knowledge, rooted in social and cultural practices (National Council for Educational Research and Training, 2005). The NCF 2005 position paper on the teaching of mathematics begins by stating that the primary goal of mathematics education is the "mathematization of the child's thought processes" and the development of the "inner resources of the growing child." It emphasized the need for processes such as formal problem solving, use of heuristics, estimation and approximation, optimization, use of patterns, visualization, representation, reasoning and proof, making connections, and mathematical communication (Ramanujam, R. 2012).

### ***Rationale***

Different segment of society possess different views about what constitutes

mathematics. Some think of mathematics as a collection of rules and procedures to be learned and applied for basic living. From this perspective, the teaching of mathematics relies on those methods best suited to promote the acquisition of skills. Others see mathematics as a basis for developing critical thinking and problem-solving skill. How a community defines mathematics affects what and how mathematics gets taught in local schools. From the second perspective, in April 2000, the NCTM published principles and standards for school Mathematics, a document intended to serve as a resource and a guide for all who make decisions that affect mathematics education of students in pre-kindergarten through grade 10. It represented the best understanding regarding mathematical thinking, learning and problem-solving of mathematics education community at the dawn of 21st century. Principles and standards specify five mathematical content domains as core aspects of the curriculum: numbers and operations, algebra, geometry, measurement and data analysis and probability.

The landscape of mathematics education in India calls for a very broad vision to encompass and comprehend. It is not only a matter of scale and magnitude in numbers of children and teacher that constitute the system, but also messy about democratic modes of functioning in which there are pulls from social and political aspirants of society. Right of children to free and compulsory Education act, 2009 (RTE, 2009) guarantees 8 years of elementary education to every child in the age group 6-14 in an age-appropriate classroom in the vicinity of his/her neighbourhood. This includes the right of every Indian child to quality mathematics education as well. Yet various studies undertaken by Government and private agencies in primary/elementary classes shows evidence of very poor learning levels among children in both language and mathematics (Education Initiatives, 2010; Pratham, 2005-2010, NCERT, 2008). Understanding of mathematics in primary classes is largely limited to 'procedural or rote-based learning'. And in fact falling averages as we move from the primary to the elementary classes indicate an increase in the levels of incomprehension for children (Education Initiatives, 2010). In recent years, there has been an increase in the role of the NCERT and the SCERTs in processes of curriculum renewal, text book development and assessment processes. Subsequent to this, many boards of education in the states undertook a curricular review exercise and the last few years have witnessed a churning. Consequently, there have been some significant shifts visible in textbooks and pedagogic processes, especially in elementary education. From such considerations this paper is going to compare the syllabus of mathematics for class VI-VIII of West Bengal Board of Secondary Education (WBBSE) with Central Board of Secondary Education (CBSE) and Indian School Certificate Examination (ICSE) and to verify the parity of the syllabus of the above boards of our country with other countries viz., USA, Singapore and Hong Kong.

### Sources

Both primary and secondary data were taken. The syllabus of mathematics of CBSE, ICSE and WBBSE of class VI-VIII has been taken from the Internet, the textbooks/schoolbooks of mathematics assigned by the three boards have been taken into account. Also, the syllabus of mathematics of class VI-VIII in USA, Singapore and Hong Kong has been taken from the Internet.

### Design

The flowchart of the design is given below :

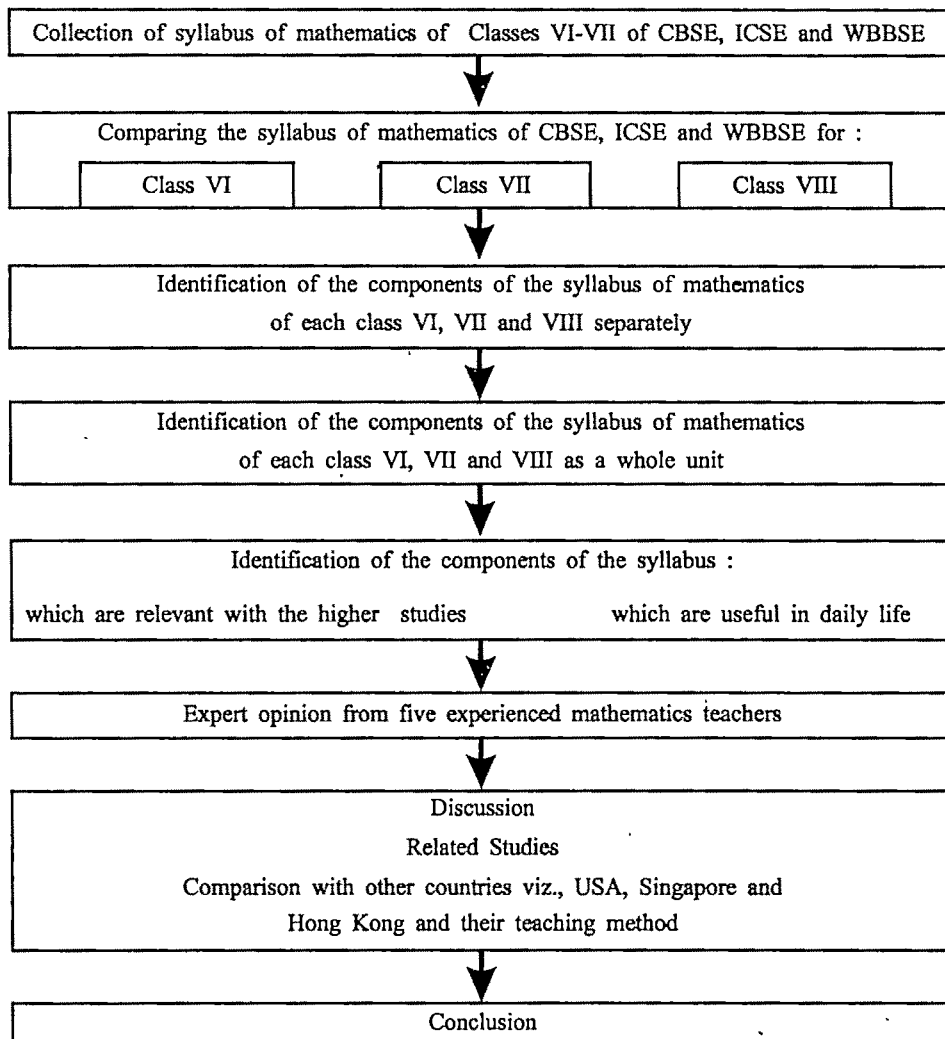


Figure 1 : Flow Chart of the design of the study (Content Analysis)

### Findings of the study

Firstly the syllabus of mathematics of classes VI-VIII is divided into seven

components namely numbers, arithmetic problems, algebra, geometry, mensuration, probability and statistics which is shown in Figure 2. Then each component is compared separately among three boards. For example, in figure 3, the number component is compared among CBSE, ICSE, WBBSE class wise.

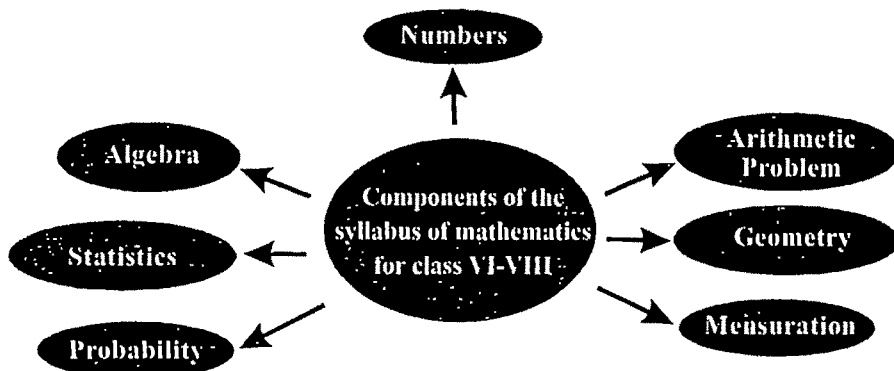


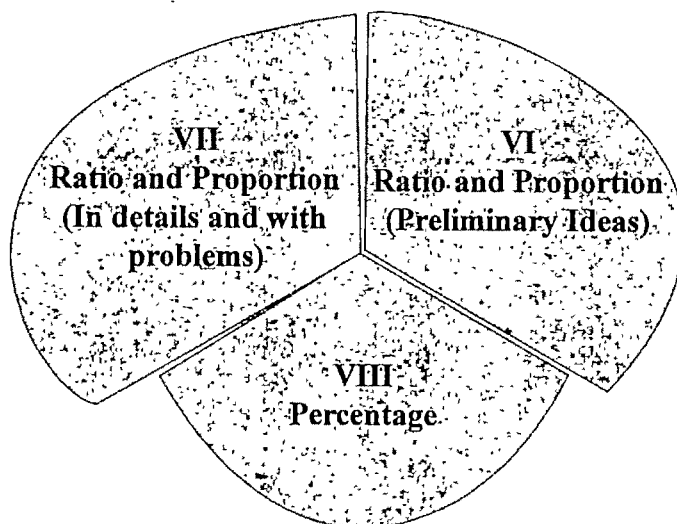
Figure 2 : Identification of components

Component : Number			
Common to CBSE, ICSE and WBBSE			
Class VI	Hindu-Arabic number system, face value, place value of a digit in a number; Integers: operations on integers, representation of integers on number line; Multiplication, division and simplification of fractions and decimals; H.C.F. and L.C.M. of three numbers		
Class VII	Integers: properties of integers, operations on integers; laws of integers		
Class VIII	1. Rational Numbers: Properties, operations, representation on real number line		
Additional (specific)			
	CBSE	ICSE	WBBSE
Class VI	Roman numerals, Factors and multiples,	Factors and multiples Power and Roots	Roman numerals, Recurring decimals, Metric system, square roots, Simplification of expressions of fractions and decimals
Class VII	Rational number, Fractions and decimals	Fractions and decimals, Approximation, Recurring decimals	Approximation, Square root of fractions and decimals
Class VIII	Cube root, Test of divisibility	Simplification of expressions of fractions and decimals	Cube root

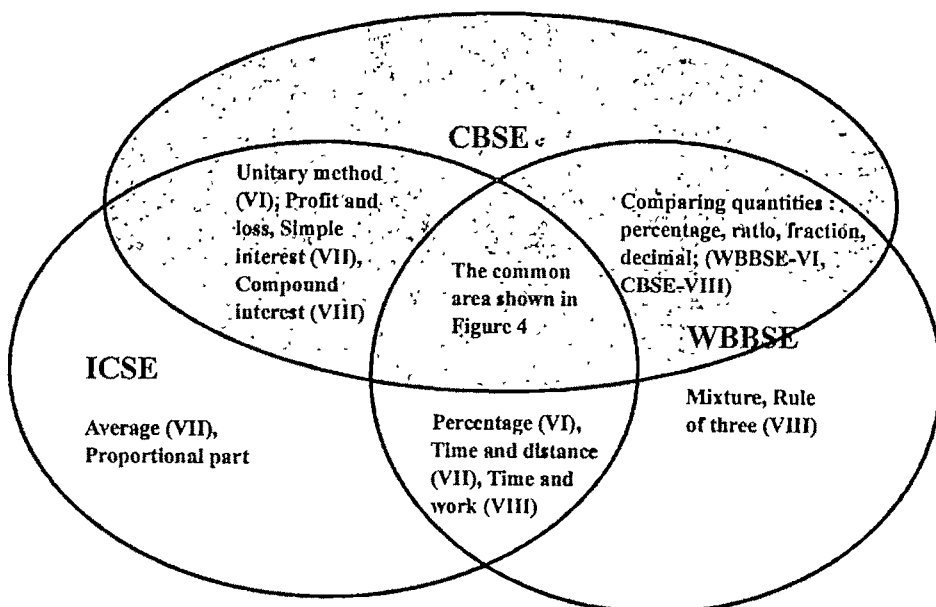
Figure 3 : Comparison of component Number in the syllabus of class VI-VIII of CBSE, ICSE and WBBSE

It may be noticed that recurring decimals is introduced in ICSE(VII), WBBSE (VI) but in CBSE syllabus there is no trace anywhere of it upto class VIII.

**Component : Arithmetic problems**



**Figure 4 : Common to CBSE, WBBSE, ICSE boards; Component: Arithmetic Problems**



**Figure 5 : Additional and overlapping portion of component arithmetic problems of CBSE, ICSE, WBBSE**

Therefore, from figure 4 and 5 it may be said that after the completion of class VIII, students of all the three boards are expected to be familiar with:

1. Ratio and proportion
2. Percentage
3. Equivalence of percentage, ratio, fraction, decimal
4. Unitary method
5. Time and Work.

Component : Algebra			
Common to CBSE, ICSE and WBBSE			
Class VI	Basic concept about algebraic expression and operations (addition, subtraction) on it		
Class VII	Basic concept about algebraic expression and operations (addition, subtraction, multiplication) on it; Linear Equation in one variable		
Class VIII	Operations on algebraic expression, special algebraic identities, $\{(a \pm b)^2, a^2 \pm b^2, (a \pm b \pm c)^2, 4ab, 2(a^2 + b^2), (a \pm b)^3, a^3 \pm b^3, \text{etc.}\}$ , factorisation and simplification of algebraic expression, Linear Equation in one variable, Graph		
Additional (specific)			
	CBSE	ICSE	WBBSE
Class VI	Multiplication, substitution on algebraic expression, Linear Equation in one variable		
Class VII		Division on algebraic expression, factorisation, inequation: graphical representation, relation and mapping, graph, simplification of algebraic expression	Division on algebraic expression, factorisation
Class VIII	Power and exponents	Power and exponents, H.C.F. and L.C.M. of algebraic expression, Pair of simultaneous equation in two variables, graphical representation, relation and mapping, graph, inequation, quadratic equation	H.C.F. and L.C.M. of algebraic expression

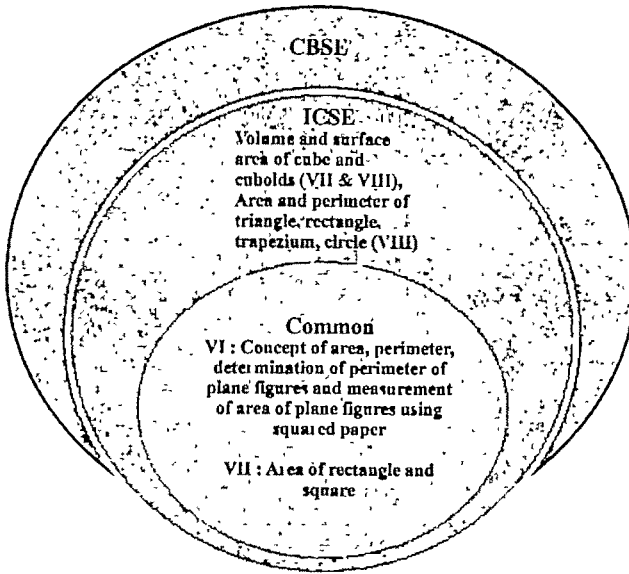
Figure 6: Comparison of component Algebra in the syllabus of class VI-VIII of CBSE, ICSE and WBBSE

<b>Component : Geometry</b>	
<b>Common to CBSE, ICSE and WBBSE</b>	
<b>Sub-units</b>	<b>Boards with classes</b>
1. Fundamental geometrical concepts: Point, line, ray, angles, line segment, etc.	Common, class VI
2. Three-dimensional solid shapes, different perspectives of solid shapes from different angles of view	Common, class VI
3. Angles: Types of angles: (acute, right, obtuse, straight, reflex), measurement	Common, class VI
4. Linear pair, vertically opposite, adjacent, corresponding, alternate, co-interior, etc. Angles	CBSE, class VII; ICSE, class VII, VIII; WBBSE class VIII
5. Properties of angles: (a) If two straight lines intersect, the adjacent angles are supplementary (b) vertically opposite angles are equal, (c) if two angles having a common arm are supplementary then other two arms lie in a straight line (verifications and applications only)	CBSE, class VII; ICSE & WBBSE, class VIII
6. Triangles: various types	Common, class VI
7. Properties of triangles: angle sum property, equal side angle; exterior and interior angle relationship, triangle inequality, greater side-greater angle relation, Pythagoras theorem (verification and related problems to all of these properties)	CBSE, ICSE, class VII, WBBSE, Class VIII
8. Properties of parallel lines: If two parallel lines are cut by a transversal line (a) the alternate angles are equal; (b) the corresponding angles are equal; (c) the interior angles on the same side of the cutting line are supplementary; & the converse of it.	CBSE, class VIII, CSE & WBBSE, class VIII
9. Area proposition of a triangle	CBSE & WBBSE, class VII, ICSE VIII

10. Congruence of triangles: concept and rules of congruency (SSS, SAS, AAS, RHS rules)	CBSE, WBBSE & ICSE, class VII; ICSE & WBBSE class VII & VIII
11. Classifications of quadrilaterals	CBSE & WBBSE, class VI; ICSE class VII
12. Properties of quadrilaterals	WBBSE, class VII; CBSE & ICSE, class VIII
13. Circles : Concepts about different parts and drawing	CBSE, class VI; ICSE, class VI & VII; WBBSE class V
14. Angle sum property of polygons	Common class VIII
15. Linear symmetry	Common class VI
16. Symmetry – linear and rotational	CBSE & WBBSE, class VI & VII; ICSE, class VII
17. Proof of some theorem : (a) If one side of a triangle is produced, the exterior angle formed is equal to the sum of the interior opposite angles. (b) Sum of the angles of a triangles is $180^\circ$ (c) If two sides of a triangle are equal, the angles opposite to them are equal and the converse. (d) If two sides of a triangle are unequal, the greater side has the greater angle opposite to it and the converse. (e) Sum of two sides of a triangle greater than the third side.	WBBSE Class VIII

<p>(f) Sum of all interior angles of a polygon having <math>n</math> numbers of sides is equal to <math>(2n-4)</math> right angles.</p> <p>(g) Among all the line segments drawn from an exterior point of a line the perpendicular distance is the smallest.</p>	
<p>18. Practical geometry-construction of :</p> <p>(a) Bisection of a given line segment</p> <p>(b) Circles</p> <p>(c) An angle equal to a given angle</p> <p>(d) Bisection of a given angle</p> <p>(e) Angles of <math>45^\circ</math>, <math>60^\circ</math>, <math>75^\circ</math>, <math>90^\circ</math> (using set square only)</p> <p>(f) A line perpendicular to a given line from a point on it</p> <p>(g) A line perpendicular to a given line from a point outside it</p>	<p>} Common class VI</p>
<p>(h) Angles of multiples of <math>15^\circ</math> (using ruler &amp; compass)</p> <p>(i) Triangles (SSS, SAS, AAS, RHS)</p>	<p>} CBSE &amp; ICSE class VI; WBBSE class VII</p>
<p>(j) Quadrilaterals</p>	<p>CBSE &amp; ICSE class VIII; WBBSE class VII</p>
<p>(k) Squares and rectangles</p>	<p>ICSE &amp; WBBSE class VII</p>
<p>(l) A line parallel to a given line</p>	<p>CBSE class VI; ICSE class VII; WBBSE class VIII</p>
<p>(m) Division of a given line segment into <math>3/5/7</math> equal parts</p>	<p>WBBSE class VIII</p>
<p>(n) Circum-circle and in-circle of a triangle</p>	<p>ICSE class VIII</p>

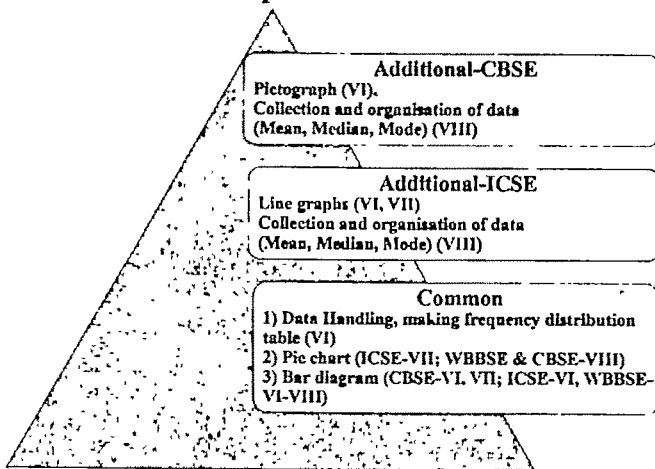
**Figure 8 : Comparison of the component Geometry in the syllabus of of class VI-VIII of CBSE, ICSE and WBBSE**



**Figure 9 : Comparison of component Mensuration in the syllabus of class VI-VIII of CBSE, ICSE and WBBSE**

It may be noticed from figure 9 that CBSE & ICSE syllabus on mensuration is almost same for class VII & VIII. But in WBBSE syllabus only perimeter of plane figures and area of squares and triangles are given in this part and there is no space for volume and surface area of cube and cuboids; area and perimeter of a circle, parallelogram, rhombus, and trapezium upto class VIII. Actually, in WBBSE syllabus in class VIII mensuration is absent.

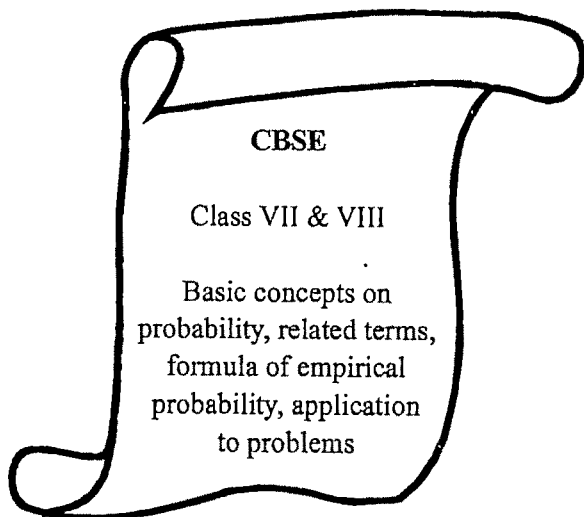
#### Component : Statistics



**Figure 10 : Comparison of the syllabus of component Statistics of class VI-VIII of CBSE, ICSE and WBBSE**

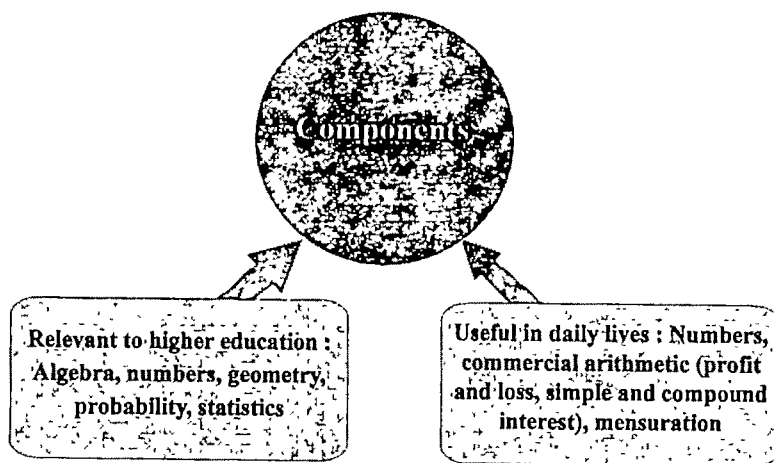
It may be said from figure 10, although data handling (pie chart and bar diagram) has been recently introduced in WBBSE syllabus in 2014, the weightage of statistics is not the same as that of CBSE and ICSE, since organisation of data collected (mean, median, mode) is not present yet up to class VIII.

**Component : Probability**



**Figure 11 : The syllabus of component Probability of class VI-VIII of CBSE**

From the figure 11 it is clear that among the above mentioned three boards probability exists only in the CBSE syllabus. It has no trace anywhere in the syllabus of the other two boards viz., ICSE and WBBSE



**Figure 12 : Identification of components which are relevant to higher education and useful in daily life**

### ***Discussion: An Overview on the three Syllabi***

#### ***Component: Arithmetic***

Typically the syllabus of mathematics at elementary education deals with rational numbers and their properties, algebra, geometry, data handling and arithmetic problem, numbers and number systems which deal with natural numbers, integers and their properties, decimals, fractions, rational numbers, their representation on the number line, factors, multiples, exponential notation, prime factorization of numbers, ratio, proportion, percentage, finding square roots and cube roots, including the algorithm for finding square roots. Negative numbers, usually introduced early in class 6, are known to be a problem area.

#### ***Component: Algebra***

Introduction of algebra begins in class 6. While the NCERT textbook limits itself to writing linear polynomial expressions and equations in one variable at the class 6 level, ICSE board introduces higher degree polynomial expressions in two variables and the operations of addition and subtraction on them, ending with solving linear equations in one variable in class 6. By class 8, all the three boards cover the three operations on higher degree polynomials in two variables, factorization or division and algebraic identities.

#### ***Component: Geometry***

Geometry is also formally introduced at this level. Traditionally, students have been struggling with the notion of proof and the actual proofs of geometrical statements, which are mostly memorised. While the new syllabus postpones formal proofs in geometry to the secondary stage, and instead lays emphasis on verification and reasoned justification, WBBSE syllabus of mathematics has retained some proof of theorems. In geometry and measurement, the content begins with giving some idea of what geometrical objects such as points, lines and line segments mean, then moves onto polygonal figures, the notion of angle, using the geometry kit to measure angles, construction of triangles, quadrilaterals, perpendiculars and angle bisectors, properties of triangles and quadrilaterals, circles, three dimensional objects namely spheres, cylinders, cones and pyramids.

#### ***Component: Mensuration***

The formula for finding the perimeter, area and volume are either arrived at or given straight away in all of the three boards.

#### ***Other Residual Components***

Apart from these major themes, there is some exposure to data handling (pictographs, frequency tables, measures of central tendency, graphs). And

amongst commercial mathematics profit and loss, percentages are common to all three boards. Simple and compound interest are only found in ICSE and CBSE, Chance and probability exists in CBSE syllabus only.

### ***Teacher Preparation***

As curriculum development is a multidimensional process its impact cannot be fully shown by any single indicator like framing of syllabus. The most important dimension is teachers' quality, competency and character for teaching the new syllabus. The most pressing need at elementary level of education is to improve teacher preparation, and continuous professional development (Ginsburg et al, 2008). For practising teachers, professional development needs to move beyond one time workshops or occasional readings of article on the topic. In order for teachers to implement effective mathematics education, they need to be supported by better teacher preparation and ongoing professional development opportunities. The teacher is the key to effective high quality mathematics education at elementary level of education. The need for adequate preparation and professional development of teachers has been recognised the world over with the realisation that the teacher conception and attitudes play an important role in the teaching learning process. This is reflected in Sowder's (2007) comment that recognition of the need to change the ways in which mathematics is taught and learned is of international concern.

A significant attempt to address the problems of pre-service and in-service teacher education is made in the National Curriculum Framework for Teacher Education (NCFTE), 2009 by the NCTE.

### ***Comparison with other Countries***

#### ***Mathematics education in USA***

In USA the curriculum of the middle grades (6-8) revolves principally around the topics: Number, Geometry, Ratios and Proportions, Expressions and Equations, Statistics and Probability, Functions.

In details content of the syllabus of grade 6-8 in USA is as follows: Linear Functions, Introduction to Irrational Numbers Using Geometry, Geometry, Statistics and Probability, Percent and Proportional Relationships, Expressions and Equations, Rational Numbers, Integer Exponents and the Scientific Notation, The Concept of Congruence, Similarity, Linear Equations, Examples of Functions from Geometry, Ratios and Proportional Relationships, Ratios and Unit Rates, Arithmetic Operations Including Dividing by a Fraction, Rational Numbers, Expressions and Equations, Area; Surface Area and Volume Problems, Statistics

### *Mathematics Education in Singapore*

Primary School comprises 6 years of schooling.

- The Foundation Stage (Primary 1 to 4)
- The Orientation Stage (Primary 5 to 6)

#### Foundation Stage

All students take the same course of study for mathematics.

#### Orientation Stage\*

Students are streamed. Subject-based banding is adopted. Students take either the Foundation Mathematics or Mathematics course of study.

### *The Three Courses of Study for Secondary Students in Singapore*

Pupils sit a national examination called the Primary School Leaving Examination (PSLE) at the end of Primary six. The examination assesses pupils' suitability for secondary education and places them in appropriate secondary school courses that suit their learning ability. Three Courses are available at the secondary school level: (1) Special Course, (2) Express Course and (3) Normal Course (Academic/Technical). Pupils undergo four or five years of secondary education with different emphases. Textbooks are an essential part of the intended curriculum. All textbooks used in schools must have the approval of the Ministry of Education. Although there are different courses of mathematics for class 6-8 in Singapore, the common components among all the different courses in class 6-8 are as follows: Ratios and Proportional Relationships, the Number System, Expressions and Equations, Geometry and Mensuration, Statistics and Probability, Functions

### *Mathematics Education in Hong Kong*

The primary and secondary mathematics are subjects for "all" while the others are studies to suit students of different abilities and needs. Students undergo six years of primary and five years of secondary schooling, of which the first nine years are considered to be compulsory basic education. Generally syllabus of mathematics of class 6-8 of Hong Kong are comprised of Decimals, Percentages, Simple equations, Number and number systems, Comparing quantities, Observing patterns and expressing generality, Algebraic relations, Functions and Geometry.

### *Teaching Method*

Teacher and teaching method occupy an important position for successful implementation of curriculum reform. Naturally, teachers have to be the main supporter of any education reform. Teachers trained in the traditional curriculum must be enabled to function competently in the new pedagogical environment through professional development, and they must also acquire familiarity with

the use of technology in teaching the subject. This is the case given that the use of technology in teaching has been strongly promoted within the past five years. Considerable effort is required of teachers so that they can be competent and well-prepared in implementing the new approaches.

For effective implementation of curriculum teachers in mathematics should always be continuously upgraded with new pedagogy. For example,  $(-2) \times (-3) = ?$  This is quite possibly the most well-known answers of all students that negative times negative integers give positive. But why? The answer is not clear in our textbook (CBSE, ICSE, WBBSE). In all textbooks, teaching of observation from pattern is incorporated as follows:

$$4(-3) = (-3) + (-3) + (-3) + (-3) = -12$$

$$3(-3) = (-3) + (-3) + (-3) = -9$$

$$2(-3) = (-3) + (-3) = -6$$

$$1(-3) = -3$$

$$0(-3) = 0.$$

In this pattern:

$$0 = 3 + (-3), -3 = 3 + (-6), -6 = 3 + (-9)$$

So,  $(-1)(-3) = 3 + 0 = 3$ . Similarly,  $(-2)(-3)$  should be one obtained from  $(-1)(-3)$  by adding 3:

$$(-2)(-3) = 3 + 3 = 2 \times 3.$$

Is this a good explanation? No. There is a very important problem. If instead of dealing with the product of integers, we consider a product such as  $(-5/11) \times (-4/3)$ , then a little thought would reveal that this reasoning by patterns breaks down completely. In this context, CCSMS (Common Core State Mathematics Syllabus, USA) highlights on the number line and give classification by using the concept of mirror image of a number. It has showed that more generally multiplying any number by  $(-1)$  flips to its mirror image on the other side of 0. Then by using distributive law viz. in,

$$\begin{aligned} (-1)(-1) + (-1) &= [(-1) + 1](-1) \\ &= 0(-1) = 0 \end{aligned}$$

$$\text{i.e., } (-1)(-1) = 1$$

$$\text{So, } (-1)(-3) = 3$$

Then,

$$\begin{aligned} (-2)(-3) &= [(-1) + (-1)](-3) \\ &= (-1)(-3) + (-1)(-3) \\ &= 3 + 3 \\ &= 2 \times 3 \end{aligned}$$

This is exactly the main emphasis in the complete mathematical explanation of why negative times a negative equals a positive. There is no need to look for patterns that do not hold true and no excuse for providing such half satisfactory explanation. There are so many foggy areas in mathematics syllabus which are not clearly explained in textbooks and teachers are not well trained in that area. So, in-service teacher training in all grades is required to fulfil the objectives of the mathematics curriculum.

What should actually be taught in schools is surely one of the most fundamental questions in education. It is surprisingly difficult to answer, for at least three reasons (a) there is great variation from one classroom, school, or nation to another; (b) “official” descriptions of what is supposed to happen are frequently at variance with what actually does happen; and (c) the way in which a matter is taught and learned is often more important than the choice of the abstract “topic” itself.

For the specific case of elementary school mathematics i.e., mathematics taught to children between the ages of approx. 6 and 14 years old can be said that, over most of the world, this consists mainly of arithmetic, with the possible inclusion of some algebra, some geometry and in a few cases functions , probability & statistics and of some experiences using computer. In fact the variation is greater than that answer might suggest.

### *Dimensions of Difference*

Difference in elementary school mathematics programmes tend to reflect difference in the notions themselves. At the most fundamental level, these differences include:

- a. Is education universal or not? If it is universal how recently was this achieved? (This is important because parents and teachers might be the products of an earlier educational system).
- b. Does the regional language or national economy depend upon sophisticated mathematics, upon quite elementary mathematics, or upon almost no mathematics ?
- c. Do all students follow the same course of study or are there several alternative ‘tracks’?
- d. How is the curriculum planned and controlled? Or are decisions left up to the individual school and individual teachers?
- e. Is primary mathematics taught by a specialist teacher who teaches only mathematics?

*Far To Go Ahead*

The NCF 2005 document lists four core areas of concern: “(1) a sense of fear and failure regarding mathematics among a majority of children, (2) a curriculum that disappoints both a talented minority and a non-participating majority, (3) crude methods of assessment that encourage a perception of mathematics as mechanical computation, (4) lack of teacher preparation and support in the teaching of mathematics.” It amplifies on the third point: “While what happens in class may alienate, it never evokes panic, as does the examination. Most of the problems cited ... relate to the tyranny of procedure and memorization of formulas..., and the central reason for the ascendancy of procedure is the nature of assessment .... Tests are designed ... to assess knowledge of procedure and memory of formulas. ...Concept learning is replaced by procedural memory. Such antiquated and crude methods of assessment have to be thoroughly overhauled ....” It recommends the following: (1) Shift the focus of mathematics education from achieving narrow goals to higher goals; (2) Engage every student with a sense of success, and at the same time offer challenges to the emerging mathematician; (3) Change modes of assessment to examine mathematization abilities rather than procedural knowledge; (4) Enrich teachers with a variety of mathematical resources./(Shirali,S & Ghosh,J,2012)

Though a lot of forward looking and significant changes have happened at the level of curriculum development and textbook writing, there are several challenges to be met to realise the goals of elementary education in mathematics. Some of these have to do with equipping teachers to cope with the demands the new curriculum places on them. There is also a need to review the new curriculum, particularly at the upper primary level, in order that it has something valuable to offer students who suffer the impact of socio-cultural and economic disparities, at home and in school, that limit their opportunity to benefit from the new curriculum./(Rampal, A., Subramaniam, J., 2012).

A major cause for concern, however, is that different state governments are slowly adapting the NCERT mathematics curriculum at the upper primary level in spite of the socio-cultural differences in the student population. Most rural children and those from socio-economically marginalised backgrounds study in government run schools where the state curriculum is in force. A large majority of first generation learners from the marginalised sections enter upper primary school without achieving appropriate learning in primary mathematics. As mentioned earlier, the issue is complex as it involves teachers’ beliefs about the ability of the learners from rural or urban poor families and oppressed castes and their perceived need to learn mathematics, and calls for special training to teach children who have no support at home.

## Conclusion

It is hoped that the newly enacted Right to Education Act for all children to get equitable quality education till they complete elementary school may bring in some positive change. In spite of the fact that the new upper primary mathematics curriculum is designed to enable children to explore, experiment and acquire reasoning skills, it remains impractical for a large number of classrooms in India./ (Rampal, A., Subramaniam, J., 2012). In comparison to other countries viz., USA, Singapore and Hong Kong it is found that probability and function are present in the syllabus of USA, Singapore and Hong Kong. Attention should be paid to the fact that while probability exists only in the CBSE and functions in the ICSE, the WBBSE syllabus neither has probability nor functions at the elementary level of education. A guidebook of teaching method and containing clear reasoning with explanation about most foggy areas (like fractions, rational numbers) for each class should be followed all over the country in view of up-gradation of teachers quality and competency level at elementary level of education. All text books for each class supported by different boards must be recognised by the education department, Government of India. Therefore lastly, it is apt to say that mathematics at the level of elementary education needs to undergo changes all over the country for all boards in terms of structure and presentation of the content.

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## Teacher's Perception of School Effectiveness : A Factorial Study

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### Abstract

*The study has highlighted the effective school profile and its understanding. At the backdrop of Indian culture the factors relating to effective school have been given vent to and this may be considered as little footstep in this regard. From this angle of vision the objectives of this study have been stated and the gravity of this problem has been unfolded. The role of the school has been described in the social perspective. The objectives of the schools in India are presented here. On the basis of different researches made on school effectiveness a review has been made. The descriptive survey method followed by multivariate exploratory approach was employed for the present study. A purposive sampling technique was used. The sample consisted 150 secondary school teachers of either sex of West Bengal government aided secondary schools. A Likert type scale for Assessment of teacher's perception of school effectiveness was developed and standardised for the study. The data was organized and analysed by factor analysis technique in SPSS Statistical Software. The extracted Principal component factors were compared with the factors collected from other sources. In course of this comparison it was seen that some factors were culturally independent, while some were partly dependent.*

**Key Words :** *School Effectiveness, Secondary Schools, Perception, Principal Component Factor.*

### Introduction

The study addresses a central theme of educational planning. How can deliberate actions by policy-makers, school heads, teachers and parents help in the attainment of educational goals. There are many schools in our urban and rural areas. But all of them are not so good that they may be declared as effective schools. There are some traits which make a school to be treated as effective.

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These traits may be discussed in the following way. **Firstly**, an effective school ought to have an imposing building where students can be provided with enough space to sit in their class room. Besides, a healthy atmosphere should be created for the well-being of the pupils. **Secondly**, the classroom situation is to be perfectly equipped so that teachers can impart their instruction at ease according to the suitability of the subject condition to be taught. **Thirdly**, the teacher-taught ratio is to be limited so that teachers can approach every pupil to see his performance and if necessary, remedial measures may be provided with. **Fourthly**, it is to be observed that student who seeks admission should have some pre-education about the content he is going to be taught. **Fifthly**, it is no denying the fact that teachers are not always well equipped with the methods, objectives and content of education. So, they should prepare themselves so that they can nurture the needs and demands of the related students. **Sixthly**, evaluation plays a major part in learning process. Through evaluation it is seen how much progress the pupils have made so far as syllabus and curriculum are concerned. This evaluation may be done through different tests. These tests may be subjective type or objective type as the situation demands. **Seventhly**, a well-furnished library is of great importance. Here, pupils should have an easy access to the books which they consider to be important in terms of their study. **Eighthly**, laboratory facilities should be afforded to the students so that they create their performance as desired by their teachers. **Ninthly**, result speaks volume of a school. If results in the external examination are good, the school draws respect from its community and other schools. Tenthly, administrators-teachers-taughts-guardian relationship is to be well-balanced. Otherwise a school can never reach the pinnacle of glory and success. Hence everyone should be alive to it.

In view of this, it may be said that if a school fulfils all the criterions as stated above, it can easily be identified and recognised as an effective school. Because others will try to reach the height which an effective school has. Here lies the glory of an effective school.

In the last decade of the 1900s, there was a burgeoning literature on school effectiveness. As the work of educational planners has moved from increasing school enrolments to the improvement of the quality of schooling, so the planner has had to become interested in school effectiveness. In more recent contributions, effective-schools research has been integrated with education production function and instructional effectiveness research, this meaning that a mixture of antecedent conditions has been included. Studies have evolved from comparative case studies to surveys, and conceptual and analytical multi-level modelling has been used to analyze and interpret the results. Numerous reviews on school effectiveness have been published since the late seventies. Examples

are Purkey and Smith (1983) and Ralph and Fennessey (1983). More recent reviews are those by Levine and Lezotte (1990), Scheerens (1992), Creemers (1994), Reynolds et al. (1993), Sammons et al. (1995), and Cotton (1995).

Scheerens and Bosker (1997) provide an analysis of the factors that are considered to work in schooling, as apparent from the actual questionnaires and scales used in 10 empirical school effectiveness studies. In their summary the main components of 13 general factors are mentioned.

Goddard, Sweetland and Hoy (2000) reviewed literature to assess other factors that impact school effectiveness. Some of these factors include "strong principal leadership, high teacher expectations for student achievement, an emphasis on basic skills, an orderly environment and frequent systematic evaluation of students" (p. 685). Another factor that Goddard et al. (2000) found to be important is consistent academic emphasis (e.g. Hoy & Sabo, 1998) conveyed through various norms, socialization processes and systems in the school.

While measurement of school effectiveness has been dominated by outcome indicators, some studies have also made an attempt to assess process indicators such as educational opportunity (Petty & Green, 2007).

On the other hand, principal effectiveness and school effectiveness seem to be correlated with each feeding the other. A study by Winter and Morgenthal (2002) found that school achievement has a high impact on potential applicants' decision to take up the job of the principal. The administrators may impact a principal's effectiveness by controlling principal's work like time utilization, motivation, learning on the job, stress etc. (Peterson, 1984) They may also be able to control the learning opportunities provided to the principal and teachers by controlling sponsorship and other resources (Young, Peterson & Short, 2002).

### ***Objectives :***

- i. Construction of a Likert type scale for assessment of teacher's perception of effective school.
- ii. To extract emerging principal component factors of school effectiveness.
- iii. To interpret the extracted principal component factors of school effectiveness.
- iv. To compare the obtained factor with those of others (Jaap Scheerens).

### ***Assumptions :***

- i. Perception can be assessed.
- ii. Perception of people about an issue vary.
- iii. Perception of people normally vary.

***Delimitations :***

- i. Only secondary school teachers have been selected as sample.
- ii. Kaiser principle in the matter of factor selection has been followed.
- iii. Only orthogonal factor structure has been taken into consideration.

***Methodology***

***Research Approach***

The present study is a descriptive survey followed by multivariate exploratory approach. The investigator has attempted to explore various principal component factors on the basis of field data.

***Sample***

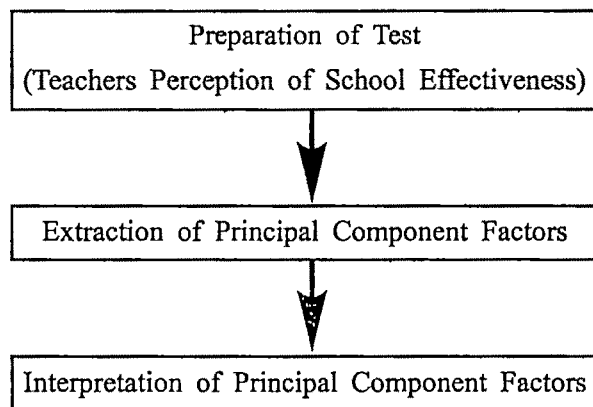
A purposive sampling techniques has been employed. One hundred fifty (150) secondary school teachers of either sex, permanently employed in West Bengal government aided secondary schools constituted the sample. The sample is from nine Bengali medium secondary schools situated in different places of four districts viz. Hooghly, Nadia, North 24-Parganas and South 24-Parganas.

***Tool***

The investigator attempted to prepare a Likert type scale for Assessment of teacher's perception of school effectiveness. The present test titled as Teacher's perception of school effectiveness scale contains 70, all positive, statement each indicating one aspect of school effectiveness. The five response alternates are—strongly agree; agree; undecided; disagree; strongly disagree and scoring weights assigned are : strongly agree-5; agree-4; undecided-3; disagree-2; strongly disagree-1.

***Research Design***

Figure-1 : Showing design of the study



**Fig: 1**

*Procedure of Data Collection*

According to the objective of this study the investigator has formulated a tool which, in fact, Likert Type Scale and it helps to determine the perception of secondary school teachers. He has applied this test to the 150 teachers. On the basis of the expressed attitude of the teachers to each item has been scored and thus total score of a teacher has been determined.

*Results***Extraction of Principal Component Factors***Organisation of the Data*

Prior to the input stage of data analysis the data must be organised for proper input into the computer system. The data sheet of the study has been organised in SPSS Statistical Software in computer. In the data sheet the score of each 70 test items have been arranged in the horizontal line wise or row wise. Therefore it has been found that total number of raw scores are 10500. The samples, such as teachers have been given a number to represent them and the raw scores represents the teacher's perception to each test items. Then the data has been coded and converted to the SPSS file for analysis.

Presentation of Extracted Principal Component Factors (PCF) with Eigen Values

**Table 1 : Total Variance Explained (Effective School)**

Sl. No.	P.C.F.	Initial Eigen Values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1st PCF	9.865	14.093	14.093	9.865	14.093	14.093	6.178	8.826	8.826
2	2nd PCF	5.983	8.547	22.640	5.983	8.547	22.640	2.628	3.755	12.581
3	3rd PCF	2.586	3.694	26.335	2.586	3.694	26.335	2.580	3.686	16.267
4	4th PCF	2.479	3.541	29.876	2.479	3.541	29.876	2.457	3.510	19.777
5	5th PCF	2.255	3.221	33.097	2.225	3.221	33.097	2.365	3.378	23.156
6	6th PCF	2.195	3.135	36.232	2.195	3.135	36.232	2.299	3.284	26.440
7	7th PCF	2.146	3.066	39.298	2.146	3.066	39.298	2.282	3.261	29.701
8	8th PCF	1.995	2.850	42.148	1.995	2.850	42.148	2.213	3.162	22.862
9	9th PCF	1.855	2.650	44.798	1.855	2.650	44.798	2.114	3.020	35.883
10	10th PCF	1.818	2.597	47.395	1.818	2.597	47.395	2.060	2.943	38.825
11	11th PCF	1.731	2.472	49.867	1.731	2.472	49.867	2.008	2.868	41.964
12	12th PCF	1.644	2.349	52.216	1.644	2.349	52.216	1.994	2.848	44.542
13	13th PCF	1.601	2.288	54.504	1.601	2.288	54.504	1.970	2.814	47.355

14	14th PCF	1.571	2.244	56.748	1.571	2.244	56.748	1.936	2.766	50.121
15	15th PCF	1.491	2.130	58.878	1.491	2.130	58.878	1.871	2.672	52.793
16	16th PCF	1.422	2.031	60.909	1.422	2.031	60.909	1.758	2.511	55.304
17	17th PCF	1.376	1.966	62.875	1.376	1.966	62.875	1.729	2.470	57.775
18	18th PCF	1.302	1.860	64.735	1.302	1.860	64.735	1.728	2.468	60.243
19	19th PCF	1.281	1.830	65.565	1.281	1.830	66.565	1.723	2.461	62.704
20	20th PCF	1.211	1.730	68.295	1.211	1.730	68.295	1.695	2.421	65.124
21	21st PCF	1.099	1.570	69.865	1.099	1.570	69.865	1.677	2.396	67.520
22	22nd PCF	1.055	1.507	71.372	1.055	1.507	71.372	1.585	2.264	69.784
23	23rd PCF	1.032	1.474	72.846	1.032	1.474	72.846	1.578	2.254	72.038
24	24th PCF	1.002	1.431	74.277	1.002	1.431	74.277	1.568	2.240	74.277

Extraction Method : Principal Component Analysis.

Rotation Method : Varimax with Kaiser Normalisation

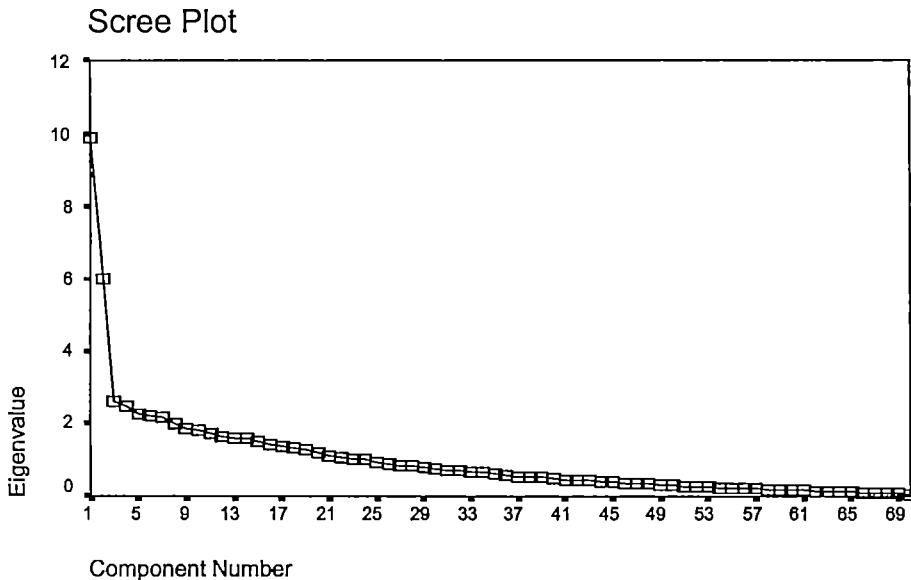
***Description of Principal Component Factors***

**Table 2 : List of Principal Component Factors**

Principal Component Factor (P. C. F.)	Name
1st p. c. f.	School's Concern for excellence scholastic attainment.
2nd p. c. f.	Concern for good academic administration.
3rd p. c. f.	Concern for teachers professionalism with respect to parents, students and peers.
4th p. c. f.	Concern for a head of the institution as an institution builder.
5th p. c. f.	Concern for teacher's commitment to professional growth in human relationship paradigm.
6th p. c. f.	Concern for teacher's competency in curriculum transaction for every learner.
7th p. c. f.	Concern for library skill building and caring students.
8th p. c. f.	Concern for building and sustaining healthy academic climate.
9th p. c. f.	Motivating learners to learn and achieve.
10th p. c. f.	Concern for student autonomy and securing right educational guidance.
11th p. c. f.	Concern for dignity of labour as tool for human resource development.

12th p. c. f. .	Concern for secularism and ensuring neighbourhood relationship.
13th p. c. f.	Quality teaching and task oriented teacher and student
14th p. c. f.	Concern for inculcation of basic values (honesty, equality, truthfulness etc.).
15th p. c. f.	Concern for discipline in aspects of instruction.
16th p. c. f.	Concern for quality coaching.
17th p. c. f.	Teacher as coach for ensuring good marks.
18th p. c. f.	Concern for teachers professional freedom.
19th p. c. f.	Concern for life centric education.
20th p. c. f.	Teachers are missionary.
21st p. c. f.	Striving for academic excellence.
22nd p. c. f.	Concern for intellectual development.
23rd p. c. f.	Concern for development of ideal human being.
24th p. c. f.	Concern for spiritual development of students.

**Figure-2: Graphical Presentation of Principal Component Factors**



*A Comparative Study on Principal Component Factors of School Effectiveness*

**Table 3 : Comparison of Principal Component Factors**

From Other's Factor (Jaap Scheerens)	From Present Study
1. Achievement, Orientation, high expectations	(1) School's Concern for excellence scholastic attainment. (9) Motivating learners to learn and achieve. (17) Teacher as coach for ensuring good marks. (21) Striving for academic excellence.
2. Educational Leadership	(2) Concern for good academic administration. (4) Concern for a head of the institution as an institution builder.
3. Consensus and Cohesion among staff.	(3) Concern for teachers professionalism with respect to parents, students and peers. (5) Concern for teacher's commitment to professional growth in human relationship paradigm.
4. Curriculum quality/ opportunity to learn	(6) Concern for teacher's competency in curriculum transaction for every learner. (10) Concern for student autonomy and securing right educational guidance. (11) Concern for dignity of labour as tool for human resource development. (12) Concern for secularism and ensuring neighbourhood relationship. (14) Concern for inculcation of basic values (honesty, equality, truthfulness etc.). (15) Concern for discipline in aspects of instruction. (16) Concern for quality coaching. (19) Concern for life centric education. (22) Concern for intellectual development. (23) Concern for development of ideal human being. (24) Concern for spiritual development of students.
5. School climate	(8) Concern for building and sustaining healthy academic climate. (13) Quality teaching and task oriented teacher and student (18) Concern for teachers professional freedom.
6. Evaluative potential	—
7. Parental involvement	—
8. Classroom Climate	(7) Concern for library skill building and caring students.
9. Effective learning time	—

As the relevant data are presented in the Table 3, it is observed that the most of the school effectiveness factors are more or less similar in the above two studies. Specifically it is also apparent that Achievement, Orientation, High expectations, Consensus and cohesion among staff, Curriculum quality/opportunity to learn are found similar and they may be called culture independent school effectiveness factors. On the other hand some dissimilar factor-profile is also noticed in the Jaap Scheerens study, i.e. Educational leadership, Evaluative potential, parental involvement, Effective learning time factors seen culturally embedded in the European culture while concern for good academic administration. Concerns for a head of the institution as an institution builder appear embedded in the Indian culture.

It may be the fact that the western culture believes in personal freedom and independence and work place culture expects leadership of the total work force. While in India the work force expects the directions and controls from the top and thinks it is the responsibility of the boss to keep the climate congenial to appropriate level of productivity. That is Indian teachers expects the school will function in order to achieve the goal if the head of the institution is only a good administrator. However, the above assertions require systematic analysis and verification.

### ***Conclusion***

- School effectiveness is a composite concept consisting of twenty-four (24) principal component factors.
- School effectiveness is partly culturally independent and partly culturally dependent.

### ***Suggestions for Further Study***

- In lieu of selecting secondary teachers as sample, teachers of other levels may be studied.
- In case of factor selection instead of Kaiser Principle other principles may be followed.
- It will be a better study if more variations are created in the target group.
- For collecting information other techniques such as interview, observation may be used to create varieties in the method.
- Multiple techniques for data collection could be employed in future. If possible some qualitative research methods like phenomenology, technography, case-studies etc. may be used.
- Systematic factor analysis—both exploratory and confirmatory may be used.

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## Training Through Creative Discussion Approach of Teaching Bioscience in Developing Creative Thinking Ability of Students

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*Shreyashi Paltasingh\**

### **Abstract**

*Development of creative thinking ability of students of ninth class by training through creative discussion approach in bioscience was evaluated. It was observed that there was significant difference in fluency, flexibility, originality and total creativity in experimental group taught through creative discussion method than control group taught through conventional method. The corresponding gain scores were also significantly higher in the experimental group. It was found that training had also significantly influenced the science achievement score and the scholastic achievement score among students.*

**Key Words :** *Teaching, Bioscience, Creative Thinking*

### **Introduction**

Enhancing creative thinking ability of students through training in creativity had received attention in recent years. Several research studies were conducted on creativity during recent years (Charlton, 2009; Yusuf, 2009; Steinmayr and Spinath, 2009 and Naderi et al, 2010). The human mind is capable of creating hundreds of ideas every day. Scientists opine that the human being uses less than ten percent of creative potential of the brain. There is urgent need to develop the remaining part for progress of the society. The creative thinking is the gift exclusively to human beings that make it different from animal. Enhancement of creativity is a powerful tool to unite mankind and thus built new era of prosperity in the world. Development of creative thinking ability among students, teachers, professionals and any individual of society is need of hour for sustainable development in the society. Professionals of all different areas are becoming aware of importance of creative thinking to improve their activities. In education, creative thinking varies from completely new ideas to new ways of considering and solving problems. It has been said that creativity is not the ability to create out of nothing, but the ability to generate new ideas by combining, changing or reapplying existing ideas.

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Creativity studies in education have been gaining momentum during last two decades. It was once thought only as an artistic quality and it has become sought after by engineers, executives and researchers now. Albert Einstein said “We can’t solve problems by using the same kind of thinking we used when we created them.” Human being is born with creative thinking abilities and some others opine that it can be developed through activities and teaching strategies. Creative thinking refers to create something new or original. It involves the skills of flexibility, originality, fluency, imagination, associative thinking, attribute listening, metaphorical thinking, forced relationship etc. It stimulate curiosity and promotes divergence. It helps a lot to cope with the rapidly changing world in current society by improving thinking skills and not by mere specific knowledge in the era of information. Creative thinking is a novel way of seeing and doing things which is characterised by four components such as fluency (generating ideas), flexibility (shifting perspectives easily), originality (consisting of something new) and elaboration (building on existing ideas) (Anwar *et al*, 2012).

Contemporary society demands the focus of education to shift from “how to live” in existing society to “how to adapt” in emerging society. So human resource development programme need to accommodate it. Educational methods have to enable students to become sensitive to problems, to identify gaps and missing elements in knowledge, to formulate conjectures, to test retest and modify those conjectures to find solutions to problems (Anita Rao, 1994). Many universities have been offering courses in creative problem solving, many engineers and business companies have started creative programmes for their professionals. Thus training in creative thinking has grown enormously during last decade of twentieth century.

In India, most of the works on creativity had emphasized on construction of tests, correlation studies with achievement, intelligence, personality, age, socioeconomic status etc. There has been little research on problem related to nurturing and promoting creative thinking especially in class room setting (Raina, 1991). If school can develop creative thinking in minds of students, then they can achieve success during succeeding period of their life by contributing novel ideas to society.

The investigator had tried to teach bioscience through creative discussion method in the experimental group to develop creative thinking ability of students. Children tend to be naturally creative but their creativity is dampened as a result of our authoritarian system of teaching. In lecture-oriented teaching of science, there is very little chance to discover the creative potentials of the children. The discovery and development of the creative genius among pupils should be of prime importance in any education system. Creative discussion approach of teaching is a suitable means in this path. Aims and objectives

of this approach are to develop among pupils the ability to produce as many relevant and unrepeatable ideas as possible in a limited time, to build up skills of giving divergent responses, to enhance the ability to produce very uncommon and novel responses as well as to develop among pupils skills of expressing and describing their new ideas in right way. Recognising its importance, there is much need to revise our teaching strategy in order to develop creative thinking ability of students in schools and the present work is an attempt in this direction.

### ***Objectives***

1. To find out the effect of creative discussion approach of teaching bio-science on development of creative thinking ability of students.
2. To compare difference in gain scores of creativity of subjects between experimental group and the control group.
3. To find out difference in bioscience achievement scores of subjects of two groups.
4. To determine difference in scholastic achievement scores of two groups.

### ***Hypotheses***

- H1: There is no significant difference between the effects of creative discussion approach and conventional method of teaching bioscience on development of creative thinking ability of students.
- H2: The Gain scores in total creativity of group taught bioscience through creative discussion approach is significantly higher than that of the control group taught by conventional method.
- H3: The training in creativity through bioscience by creative discussion approach produces significantly higher achievement in science than the conventional method.
- H4: The experimental group obtains higher post test scholastic achievement scores than the conventional group.

### ***Methods***

#### ***Sample***

A total of 120 students of ninth class from two Oriya medium secondary schools located in Banpur town of Khurda district of Orissa were selected. Among them, girls were 64 and boys were 56 in numbers. One school called Godavarish Vidhyapeeth (henceforth called School-I) has provision for coeducation and the other school called Govt. Girls High School (henceforth called School-II) is a girls school. In this case pupils of class-IX of all secondary schools of the district constitute the population.

#### ***Tools***

Jalota's Group Test of General Mental Ability was used to measure intelligence.

Mehdi's Verbal Test of Creative Thinking was administered to find out total creativity scores. A bioscience achievement test prepared by the investigator with content validity and coefficient reliability of 0.74 was used to measure achievement scores.

### ***Procedure***

Samples were divided into two groups i.e. experimental group (Group-A) and control group (Group-B) with equal number of students under each group as given in table-1.

**Table-1 : Break up of students in Experimental and Control Group**

	Group-A (Experimental group)			Group-B (Control group)		
	Girls	Boys	Total	Girls	Boys	Total
School-I	12	28	40	12	28	40
School-II	20	Nil	20	20	Nil	20

Pupils irregular in attendance were excluded from the study. Both the groups were matched well in respect of their intelligence and previous achievement before onset of the experiment. There was no significant difference in intelligence and science achievement scores between two groups. Mehdi's Verbal Test of Creative Thinking was administered before the experiment to both the groups to record the pre test scores. The researcher had taught the bioscience chapters to Group-A of each school through Creative Discussion approach for 20 weeks. The science teacher of the class taught same topics by conventional method as usual in the control group. After the completion of the experiment, Mehdi's Verbal Test of Creative Thinking was administered to both the groups to get post test scores. Total marks obtained by students in the annual examination was considered as scholastic achievement.

### ***Statistical Analysis***

The significance of difference in pre test and post test correlated mean scores were tested by t-test to find out effect of training on creativity and achievement scores (Garrett, 1981). The t-value between gain scores was found out using pooled variance (Best and Kahn, 1989).

### ***Result and Discussion***

#### ***I. Creative Discussion Approach versus Conventional Method***

The first hypothesis tests creative thinking ability of subjects in two groups. But creativity is a measure of fluency, flexibility, originality. So post scores of these three components between two approaches of teaching are compared individually to arrive at conclusion.

The mean score, standard deviation and t value of pre test and post test results fluency, flexibility, originality and total creativity of both experimental group and control group are presented in table-2.

**Table-2 : Mean, Standard Deviation and t values of Pre test and Post test Scores of total creativity of Creative Discussion Approach (Group-A) and Conventional Method (Group-B).**

		Girls						Boys					
Gr.	Compo-nents	N	M Pre	S.D.	M Post	S.D.	t- value	N	M Pre	S.D.	M Post	S.D.	t- value
School-I													
A	Fluency	12	43.01	8.08	64.21	10.84	2.461 **	28	38.38	12.78	61.52	11.62	2.337 **
	Flexibility	12	23.12	6.28	38.85	9.60	2.233 **	28	25.32	7.24	39.97	9.52	2.201 **
	Originality	12	16.48	4.70	30.52	8.27	2.390 **	28	16.05	7.11	29.50	8.48	2.398 **
	Creativity	12	86.61	17.28	133.58	31.15	2.222 **	28	79.75	23.18	130.99	24.87	2.173 **
B	Fluency	12	38.94	9.28	43.05	8.20	0.528	28	40.39	11.36	46.37	12.33	0.453
	Flexibility	12	18.80	4.89	21.24	10.28	0.285	28	22.62	6.37	20.70	7.08	0.259
	Originality	12	12.98	5.05	10.46	7.08	0.436	28	13.22	6.37	11.92	7.5	0.167
	Creativity	12	70.72	16.22	74.75	25.60	0.191	28	76.23	30.56	78.99	28.60	0.084
School-II													
A	Fluency	20	36.05	10.65	58.08	11.30	2.642 **						
	Flexibility	20	22.52	7.72	36.90	8.18	2.423 **						
	Originality	20	13.27	5.07	27.24	7.04	2.352 **						
	Creativity	20	71.84	24.30	122.22	36.28	2.348 **						
B	Fluency	20	33.67	9.80	37.14	8.25	0.370						
	Flexibility	20	18.61	7.24	16.07	7.95	0.327						
	Originality	20	12.78	6.02	14.03	8.10	0.168						
	Creativity	20	65.06	19.75	67.24	16.22	0.446						

\*\* indicate significant at  $P < 0.05$

N = Sample Size, M Pre = Mean of Pre Test Score, M Post = Mean Post Test Score

S.D. = Standard Deviation

The t value between post test and pre test fluency scores of two groups was 2.461 and 2.642 in girls and 2.337 in boys which was significant at 0.05 level of significance. However, it is not significant in control group. It indicated that there was significant difference in mean fluency scores of both girls and boys taught through creative discussion approach.

The t value between post test and pre test flexibility scores between experimental and control groups was 2.233 and 2.423 in girls and 2.201 in boys which was significant ( $P < 0.05$ ). But it is not significant in control group. So it can be inferred that there was significant difference in mean flexibility score of subjects taught through creative discussion method.

The t value between post test and pre test originality scores of two groups were 2.390, 2.352 in girls and 2.398 in boys which was significant ( $P < 0.05$ ). But t-value is not significant in control group. It implied that there was significant difference in originality score of two groups.

Thus mean scores in fluency, flexibility, originality in post test were found significantly different ( $P < 0.05$ ) in experimental group than the control group.

**Table-3 : Mean, Standard Deviation and t values of Gain in total creativity of Creative Discussion Approach (Group-A) and Conventional Method (Group-B).**

	Girls						Boys					
	Group-A			Group-B			Group-A			Group-B		
Components	N	M	S.D.	M	S.D.	t-value	N	M	S.D.	M	S.D.	t-value
School-I												
Fluency	12	21.10	9.17	4.11	3.87	5.948*	28	23.14	13.15	5.98	3.65	6.654*
Flexibility	12	15.73	10.78	2.44	2.02	4.229*	28	14.65	8.42	-1.92	1.40	10.336*
Originality	12	14.04	11.08	-2.52	1.90	5.103*	28	13.45	7.13	-1.30	0.87	10.866*
Creativity	12	50.97	18.70	4.03	3.05	8.582*	28	51.24	20.50	2.76	1.67	12.472*
School-II												
Fluency	20	22.03	12.84	3.47	2.63	6.333*						
Flexibility	20	14.38	9.52	-2.54	1.28	7.877*						
Originality	20	13.97	10.28	1.25	0.98	5.509*						
Creativity	20	50.38	23.82	2.18	1.95	9.019*						

\* indicate significant at  $P < 0.01$

N = Sample Size, M = Mean of Gain Score, S.D. = Standard Deviation

As per the table, the t values of post test and pre test of total creativity scores of two groups were 2.222 and 2.348 in girls and 2.173 in boys which was significant at 0.05 level of significance. However, such values are not significant in control group. So, it can be concluded that training in creativity had resulted significant difference in creative thinking ability of students taught through creative discussion approach than the control group taught by conventional method.

## *II. Gain Score in Creativity in two groups*

The second hypothesis tests gain in creative ability of experimental and control group which in turn is related to gain in fluency, flexibility, originality and total creativity scores. The mean gain, standard deviation and t value of two groups in respect to fluency, flexibility, originality and total creativity are presented in table-3.

It was found that the t value of gain in fluency score was 5.948 and 6.333 in girls which is significant at 0.01 level of significance and that of boys was 6.654 which is also significant ( $P < 0.01$ ). It indicated gain in fluency was significantly higher in experimental group than the control group.

The t value of gain in flexibility score of two groups were significant ( $P < 0.01$ ) in girls (4.229 and 7.877) and boys (10.336). So, it can be inferred that gain in flexibility was significantly higher in experimental group.

The t value of gain in originality scores of two groups were also significant ( $P < 0.01$ ) in girls (5.103 and 5.509) and boys (10.866) indicating significantly higher gain in experimental group.

The t value of gain in total creativity scores of two groups were found as 8.582 and 9.019 in girls and 12.472 in boys which were significant ( $P < 0.01$ ). So it can be concluded that the gain in creativity of subjects taught through creative discussion approach was significantly higher than the control group taught by conventional method. So the second hypothesis is accepted. Results of the present work that training creative thinking ability has significant positive effect on creativity of subjects in experimental group is in agreement with earlier works (Khatena, 1973; Jarial, 1981; Singh, 1987.)

## *III. Training and Science Achievement*

Achievement in the area of education is very important for children especially during adolescence. Educational achievement has become an index of success in the highly competitive world. So its relation with

creativity should be studied in research studies. A teacher made test in bioscience was administered soon after completion of training on creativity, to compare scores of two groups. Subsequently achievement scores in science in annual examination of subjects of experimental group was compared with the control group. The mean gain, standard deviation and t value of two groups are given in table-4.

**Table-4 : Post test Teacher made Science Achievement (TMSA) scores and Annual examination Science Achievement (AESAs) scores of Creative Discussion Approach (Group-A) and Conventional Method (Group-B).**

Components	Girls						Boys					
	Group-A			Group-B			Group-A			Group-B		
	N	M	S.D.	M	S.D.	t-value	N	M	S.D.	M	S.D.	t-value
School-I												
TMSA	12	74.48	14.68	49.50	10.25	4.833*	28	68.85	16.42	51.27	11.77	4.605*
AESA	12	66.07	17.40	43.29	8.75	4.052*	28	61.18	13.64	42.60	9.85	5.844*
School-II												
TMSA	20	72.28	10.20	47.68	9.46	8.082*						
AESA	20	60.55	14.65	40.95	7.42	5.338*						

\* indicate significant at  $P < 0.01$

N=Sample size, M=Mean of Gain score, S.D.=Standard Deviation

It was found that the t values of teacher made science achievement score between experimental group and control group were significant ( $P < 0.01$ ) with values of 4.833 8.082 in girls and 4.605 in boys. The corresponding t values of annual examination science achievement scores were 4.052, 5.338 and 5.844 which were also significant at 0.01 level of significance. So the third hypothesis which states that the training in creativity through creative discussion method produces significantly higher achievement in science in experimental group is accepted.

#### IV. Training and Scholastic Achievement

Total marks obtained by pupils in all subjects in the annual examination of class-IX were considered as their scholastic achievement. This score of both the groups were compared. The mean gain, standard deviation and t value of two groups are given in table-5.

**Table-5 : Post test Scholastic Achievement scores (SAS) of Creative Discussion Approach (Group-A) and Conventional Method (Group-B).**

Components	Girls						Boys					
	Group-A			Group-B			Group-A			Group-B		
	N	M	S.D.	M	S.D.	t-value	N	M	S.D.	M	S.D.	t-value
School-I												
SAS	12	402.40	76.53	312.45	71.85	2.968*	28	347.43	68.35	277.40	58.60	4.116*
School-II												
SAS	20	317.95	54.30	231.03	57.85	4.899*						

\* indicate significant at  $P < 0.01$

N = Sample size, M = Mean of Gain score, S.D. = Standard Deviation

The t values of scholastic achievement scores were 2.968 and 4.899 in girls and 4.116 in boys which were also significant at 0.01 level of significance. Hence, it can be concluded that the training in creativity through creative discussion method obtained significantly higher post test scholastic achievement scores in experimental group and the fourth hypothesis is accepted. It is also in concurrence with earlier works (Srivastava and Srilata, 1992 and Trivedi and Bhargava, 2010, Nami *etal*, 2014).

### Implications

Some important educational implications can be derived from the present study.

Teachers should recognise creative thinking as an important aspect and find ways to enhance its development among students. Several research studies (Anwar *etal*, 2012) has indicated that the idealistic educational approach is more appropriate for development of creativity. Torrance as a pioneer in creativity research opined that too much pressure on children to learn academic subjects tends to prematurely stifle fantasy. He also set forth five principles which teachers should follow to develop creativity such as i) to treat children's questions and ideas with respect, ii) treat unusual ideas with respect, iii) show children their ideas have value, iv) provide opportunities for self initiated learning and v) provide periods of non-evaluated practice.

There is good scope to develop creative thinking ability of students by adopting suitable teaching strategy based on creative discussion approach. Teachers should be trained in such methods during in service and pre service training. School Principals need to organize orientation programmes and workshops time to time for their teachers to develop effective creative oriented teaching skills in teachers by inviting concerned resource persons. Training may be conducted at regular intervals with necessary assessment and feed back programmes. Teachers adopting creative teaching methods should be recognized and honoured by authority.

Students showing higher creativity should be encouraged and rewarded. Formal system of education can incorporate some tests and exercises to develop creative thinking ability of students. Above all, school authorities need to develop an environment for creative thinking of students.

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## Value System of Teacher Educators in West Bengal

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### Abstract

*Value is a significant element of the personality of humans which influence their thought and behaviour and no human action is beyond the purview of value operation. Thus value system is an important aspect of teacher educators' effectiveness. Present teacher educators are expected to function not only as facilitators for acquisition of knowledge but also inculcators of values and transformers of inner beings. But crisis of value system is visible in every aspect of our society and teacher educators are no exceptions. Based on the present scenario, it is essential to know and understand the level of value system of present teacher educators. Therefore, the researcher conducted a survey on 210 participants, sourced from B.Ed. colleges affiliated to 6 Universities of West Bengal. t-test and ANOVA were done to find out the mean differences of two groups (based on gender, teaching experience and nature of institution) and three groups (based on educational specialisation) respectively. Collected data were analysed through SPSS 19.0 Version and significance of t values and F values were tested at 0.05 level. The study reveals that there exists significant differences in value systems between Government financed and self-financed teacher educators, and senior and junior teacher educators. But such difference is not found between male and female teacher educators. The result of ANOVA shows significant differences among the teacher educators of different educational specialisation groups, i.e., language, social science and science group. But overall value system of teacher educators is found to be predominantly theoretical and social values. The study provides some recommendations based on the research findings.*

**Key Words:** *Value System, Teacher Educators*

### Introduction

Human life is guided by values and no human action is beyond the purview of value operation. But, "India's political and social life is passing through a phase,

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which poses the danger of erosion to long-accepted values...” (NPE, 1986). We may raise concern on the value erosion in industries, where the culture of our society is being influenced by the technological advancements. **Pushparajan (1990)** identified that “the value crisis is actually the cumulative effect of a trend based on technological revolution, self-alienation, consumerism etc. The various facets of value crisis embody faith, morality, energy, and ecological crisis”.

It is a fact that science and technology are considered important determinants of human progress. But advancement of these two brings together some ill-effects, especially erosion of values. **Swamy(1996)** stated that, “There are deep moral problems within science, of external forces and constraints in its development, and of dangers in uncontrolled technological change. This has naturally led to a reappraisal of the value system governing science and technology, leading to a critical reassessment of their role in human life. Most of the present problems like pollution, global warming, ecological disasters, hole in the ozone-layer, nuclear waste disposal, toxic chemicals, misuse of genetic engineering etc. have been due to the worst application of modern science and technology”. **CFTE-2004** truly reflected that, “The crisis of value system is visible globally, India is no exception. The last five decades have witnessed constant erosion of essential social, moral, humanistic, aesthetic and spiritual values”. The values are getting eroded are human values, community and social values, cultural values and institutional values of our nation. If science and technology are equally employed to develop sense of values, it will be beneficial for our society. Only value based education brings a change in a human being to make him a ‘value-added’ active member of the society. **N.C.F. (2005)** expected that, “Education in the true sense should empower individuals to clarify their values; to enable them to take conscious and deliberate decisions, taking into consideration the consequence of their actions...” Here lies the responsibility of teaching communities, especially teacher educators. Present teacher educators are expected to function not only as a facilitators for acquisition of knowledge but also inculcators of values and transformers of inner beings.

Values are normative standards by which human beings are influenced in the choice among alternative courses of action. Thus values have been considered very important and fundamental for every individual. So, there is a high need of proper value dimension for quality humanistic education for 21st century. The importance of specific values e.g. love, social justice, equality, harmony, peace, humanism are urgent needs for different levels of curricula. Teacher Education institutions may assume a leadership role in quality education. But the pervasive influence of science and technology is a serious impact to their wisdom, vision, zeal, thinking process, creativity, and especially their value

system. Here, the term 'value system' means "The set of beliefs, principles and standards a person has in relation to a particular subject. It is a system insofar as the beliefs etc. are related to one another" (Rowntree, 1981). Therefore, the value system is an important aspect of teacher educators' effectiveness in all extent. Now it is essential to know and understand the level of value system of the present teacher educators.

Several related literature are available to throw light on above topic. **Roy Choudhury (1958)** studied values among teachers which showed high political and low religious values among them. **Andrews (1966)** found significant difference among teachers in eight subject areas on theoretical, economic, aesthetic and political values. **Dixit and Sharma's (1969)** study shows that male teachers scored high on aesthetic political and social values than female teachers. **Kulshrestha (1972)** found that the teachers born after independence were more interested in social matters than the teachers who were born in the pre-independent period. **Pachaury (1973)** found that the predominant values present in science teachers were creativity, open mindedness, objectivity and experimental verification. **Singh (1974)** also found that the age of teachers influence their religious and political values.

Teachers with high social and theoretical values have better professional satisfaction. **Kumari (1981)** found that rural women teachers and urban men teachers possessed high morality. The urban women teachers preferred more economic and social values whereas rural women preferred aesthetic, theoretical and religious values. **Kumar and Mutha's (1985)** study revealed that the non-effective teachers score high on political values whereas theoretical values were preferred more by effective teachers. **Kumari (1987)** found that male teachers preferred need affiliation and the values like aesthetic, theoretical and social values, while female teachers preferred the need for maintaining order. **Nag (2000)** worked on value profile of college-principals. Her study found that college-principals stand relatively high in theoretical, aesthetic and social values and low in political value. **Sing (2004)** found that there were significant differences in values between school and college teachers but no significant difference was found in their attitude towards the teaching profession. **Mishra (2009)** found that there were significant differences in values of effective and ineffective teachers in respect of their sex, age, subject and place of habitation. **Dhillon and Kaur (2009)** found insignificant difference in different dimensions of values among male and female, and government and private school teachers. There was no significant relationship between teacher effectiveness and value patterns of teachers. **Bhattacharyya and Jana (2012)** found insignificant differences in value patterns between male and female, deputed and fresher and arts and science M.Ed. students.

The previous literatures were concerned with the maximum number of comparative studies on values or value patterns or value systems (based on Sprangerian classification) of school-college teachers in respect of their genders, ages, educational streams and localities, in both national and foreign context. Very few studies were found on teacher educators. Based on the present scenario, it is needed to be studied properly about the existing nature of value system of teacher educators. A study is therefore attempted in this context.

### ***Objectives of the Study***

- O<sub>1</sub>** : To compare the value system of male and female teacher educators.
- O<sub>2</sub>** : To compare the value system of senior and junior teacher educators.
- O<sub>3</sub>** : To compare the value system of teacher educators belonging to Government financed and self-financed B.Ed. Colleges.
- O<sub>4</sub>** : To compare the value system of teacher educators belonging to different Groups (i.e. Language group, Social Science group, Science group).

### ***Hypotheses***

- H<sub>1</sub>** : There is no significant difference in the value system of male and female teacher educators.
- H<sub>2</sub>** : There is no significant difference in the value system of senior and junior teacher educators.
- H<sub>3</sub>** : There is no significant difference in the value system of teacher educators belonging to Government financed and self-financed B.Ed. Colleges.
- H<sub>4</sub>** : There is no significant difference in the value system of teacher educators belonging to different Groups (i.e. Language group, Social Science group, Science group).

### ***Methodology***

#### ***Variables***

- a) Major Variable:** Value system, consisting of 6 components viz. Theoretical Value, Economic Value, Aesthetic Value, Social Value, Political Value and Religious Value.
- b) Categorical Variables:** Gender, Teaching Experience, Nature of Institution and Educational Specialisation Groups.

***Brief definitions of six values as classified by Spranger is given below.***

#### ***Research Design:***

In light of critical appraisal of previous literature, samples were categorised in different groups, Gender (male and female), Teaching Experience (senior and

junior), Nature of Institution (Government Financed and Self-Financed) and each Educational Specialisation Groups (Language, Social Science and Science). In order to get the proper reflection, the researcher used survey research 'design of descriptive research method in this study. A survey of secondary level teacher educators of B.Ed. colleges affiliated to State Universities of West Bengal regarding their value system was done.

S.N	Value	Operational Definition
i)	<b>Theoretical Value (T.V.)</b>	This is characterized by a dominant interest in the discovery of truth and by an empirical, critical, relational and intellectual approach. Theoretical Values have reference to practical utilization of matter.
ii)	<b>Economic Value (E.V.)</b>	Man requires economically sound position in life. Man may attach more value to collect power and wealth and dominate others. Adherence to useful and practical values prevailing is a stereo type of the businessman.
iii)	<b>Aesthetic Value (A.V.)</b>	Aesthetic value is the harmony of judging and enjoying each unique experience from the stand point of its glance, symmetry and fitness and regarding life as a procession of events where each single impression is enjoyed for its own sake.
iv)	<b>Social Value (S.V.)</b>	This value consists in love for people (Beyond one's own family). A man of social value gives emphasis to social relation of man. The social man prizes other persons as ends and therefore himself remains kind, sympathetic and selfless.
v)	<b>Political Value (P.V.)</b>	The political man is interested primarily in power. Leaders of any field have high power value. Man has to survive on the Earth through a long termed competition and struggle. So man finds power value.
vi)	<b>Religious Value (R.V.)</b>	The highest value for religious man may be called unity. He is mystical and seeks to comprehend the cosmos as a whole, to relate him to its embracing totally.

**Sample :** Stratified Random sampling technique was adopted; 6 Universities viz. Calcutta University (C.U.), West Bengal State University (W.B.S.U.), Kalyani University (K.U), Vidyasagar University (V.U.), Burdwan University

(B.U.), and North Bengal University (N.B.U.) were selected. 50 colleges from among all B.Ed. colleges / B.Ed. department of general colleges recognised by the N.C.T.E. and affiliated to above 6 State Universities, were chosen randomly. 210 fulltime teacher educators (except Principal or T.I.C) were taken only from Language, Social Science and Science groups. Here, teacher educators having more than ten years of teaching experience were considered senior, and those with less than ten years teaching experience were considered to be junior teacher educators. Completely filled up response-sheet of participants was considered for study.

**Table1 : The sample was stratified according to the categorical variables**

Gender	No.	Teaching Experience	No.	Nature of Institution	No.	Educational Specialisation Group	No.
Male	115	Senior	83	Government Financed	101	Language Group	65
						Social Science Group	80
Female	95	Junior	127	Self-Financed	109	Science Group	65
<b>Total</b>	<b>210</b>		<b>210</b>		<b>210</b>		<b>210</b>

### **Tools**

**Teacher Values Inventory (TVI) :** It was developed by Dr. (Mrs.) H.L. Sing and Dr. S.P. Ahluwalia in the year 1994. It was constructed specially for teachers and standardized with high reliability (0.81). This inventory (TVI) Consists of 25 items based on the six type values, T.V, E.V, A.V, S.V, P.V and R.V. The classification was based directly upon Edward Spranger's "Types of Men" (1928). 'TVI' is a forced choice type of instrument. Because the respondent is required to arrange all the **six alternatives** in order of his/her preference 1 to 6, hence this format of TVI was to ensure that all values could be tested under similar conditions.

**Procedures of Data Collection and Analysis:** The investigator visited the Colleges personally and the teacher educators were given a short instruction regarding the filling in of their responses. After that, the tool along with response-sheet was given to them and they required approximately 25 to 30 minutes for completing their responses. Collected data were tabulated and organized for analysis and interpretation. Descriptive statistics like mean, standard deviation were calculated for all the groups and for all the scores.

After that, inferential statistical analyses like t-test and ANOVA were carried out to find the mean differences between the groups. The data were analyzed through SPSS 19.0 Version and the Significance of t values and F values were tested at 0.05 level of Significance.

### Results

Results of descriptive statistics and the results of hypotheses testing are given below.

**Table 2 : Descriptive statistics on Value System of teacher educators of all Different Groups**

Variable	Group	N		Values					
				T.V.	E.V.	A.V.	S.V.	P.V.	R.V.
Gender	Male	115	Mean	90.76	84.74	84.34	97.77	83	84.40
			S.D.	10.022	11.465	14.349	12.915	10.958	12.224
			S.E.	0.935	1.069	1.338	1.204	1.022	1.140
	Female	95	Mean	91.92	85.16	86.55	96.26	81.94	83.18
			S.D.	10.858	11.109	12.278	14.521	11.725	12.044
			S.E.	1.114	1.140	1.260	1.490	1.203	1.236
Teaching Experience	Senior	83	Mean	91.53	86.81	85.72	97.86	82.66	80.42
			S.D.	10.081	10.957	14.242	14.054	11.995	13.60
			S.E.	1.106	1.203	1.563	1.543	1.317	1.493
	Junior	127	Mean	91.12	83.70	85.09	96.58	82.43	86.09
			S.D.	10.638	11.362	12.984	13.415	10.863	10.53
			S.E.	0.944	1.008	1.152	1.190	0.964	0.934
Nature of Institution	Govt. Financed	101	Mean	92.01	86.79	83.86	97.71	82.86	81.76
			S.D.	9.361	11.482	13.853	13.658	11.483	13.282
			S.E.	0.931	1.142	1.378	1.359	1.143	1.322
	Self-Financed	109	Mean	90.61	83.20	86.71	96.50	82.20	85.78
			S.D.	11.277	10.86	13.01	13.683	11.164	10.655
			S.E.	1.080	1.040	1.246	1.311	1.069	1.021
Educational Specialisation Groups	Language	65	Mean	92.52	86.88	80.45	100.32	83.57	81.26
			S.D.	10.338	13.199	15.324	13.846	11.847	12.675
			S.E.	1.282	1.637	1.901	1.717	1.469	1.572
	Social Sc.	80	Mean	91.23	85.20	85.58	97.53	83.04	82.44
			S.D.	10.990	11.046	12.680	14.290	11.963	13.250
			S.E.	1.229	1.235	1.418	1.598	1.338	1.481
	Science	65	Mean	90.11	82.65	89.94	93.31	80.83	88.17
			S.D.	9.705	9.028	10.628	11.810	9.765	8.650
			S.E.	1.204	1.120	1.318	1.465	1.211	1.073

$H_1$ ,  $H_2$  and  $H_3$  are tested by employing 't' test and results are presented in table 3.

**Table 3 : The results of t-test on the Value System of teacher educators based on their gender, teaching experience and nature of institution**

Variable	Group	Name of Values	t-Values	Degree of freedom	Significant (2-tailed)	P. Value
Gender	Male Vs. Female	T.V.	0.803	208	N.S.	0.423
		E.V.	0.267		N.S.	0.79
		A.V.	1.184		N.S.	0.238
		S.V.	0.793		N.S.	0.429
		P.V.	0.678		N.S.	0.499
		R.V.	0.725		N.S.	0.469
Teaching Experience	Senior Vs. Junior	T.V.	0.28	208	N.S.	0.78
		E.V.	1.964		N.S.	0.51
		A.V.	0.334		N.S.	0.739
		S.V.	0.66		N.S.	0.51
		P.V.	0.149		N.S.	0.882
		R.V.	3.391		**	0.001
Nature of Institution	Government Financed Vs. Self-Financed	T.V.	0.978	208	N.S.	0.329
		E.V.	2.329		**	0.021
		A.V.	1.535		N.S.	0.126
		S.V.	0.64		N.S.	0.523
		P.V.	0.422		N.S.	0.674
		R.V.	2.426		**	0.016

\*\* indicates significant at 0.05 Level and N.S. indicates Not Significant at 0.05 Level

**Interpretation of  $H_1$  testing :** Table 3 shows, for all components of value system, the difference between the mean of male and female teacher educators is not significant. Hence  $H_1$  may be accepted. Therefore there is no significant difference in the value of male and female teacher educators.

**Interpretation of  $H_2$  testing :** Table 3 shows that for maximum components of value system, T.V., E.V., A.V., S.V. and P.V., the difference between the mean of senior and junior teacher educators is not significant. However, the difference in the case of RV is significant at 5% level. Therefore,  $H_2$  may be accepted in all cases excepting religious value. So it can be concluded that, there is no significant difference in T.V., E.V., A.V., S.V., P.V., of senior and junior teacher educators excepting their religious value. Table 2 shows that the mean score of R.V. for junior teacher educators is greater than that for senior teacher educators.

**Interpretation of  $H_3$  testing :** Table 3 shows that, for maximum components of value system, T.V., A.V., S.V. and P.V., the difference between the mean of Government financed and self-financed Colleges is not significant. However, the difference of means is significant for E.V. and R.V. at 5% level.  $H_3$  may be **accepted** in all cases excepting economic value and religious value. So there is no significant difference in T.V., A.V., S.V., P.V., of teacher educators belonging to Government financed and self-financed B.Ed. Colleges excepting their E.V. and R.V. Table 2 shows that the mean score for E.V. is greater for Government financed colleges than self-financed Colleges, while the mean score for R.V. of self-financed Colleges is greater than that for Government financed colleges.  $H_4$  is tested by employing one way ANOVA and the result is presented in table 4.

**Table 4 : Results of one way ANOVA on different groups  
(i.e. Language group, Social Science group, Science group)**

Value System		Sum of Square	df.	mean square	F	P. Value
T.V.	Between Group	190.012	2	95.006	0.878	0.417 (N.S.)
	Within Group	22410	207	108.263		
	Total	22600.424	209			
E.V.	Between Group	591.252	2	295.626	2.353	0.098 (N.S.)
	Within Group	26004.677	207	125.626		
	Total	26595.929	209			
A.V.	Between Group	2935.63	2	1467.815	8.691	0 (**)
	Within Group	34959.365	207	168.886		
	Total	37894.995	209			
S.V.	Between Group	1624.446	2	812.223	4.504	0.012(**)
	Within Group	37328.012	207	180.329		
	Total	38952.457	209			
P.V.	Between Group	278.459	2	139.23	1.092	0.337(N.S.)
	Within Group	26391.964	207	127.497		
	Total	26670.424	209			
R.V.	Between Group	1807.744	2	903.872	6.465	0.002(**)
	Within Group	28941.38	207	139.813		
	Total	30749.124	209			

**\*\* indicates significant at 0.05 Level and N.S. indicates Not Significant at 0.05 Level**

It is found from the table 4 that the computed values of 'F' for T.V., E.V. and P.V. are not significant ( $p > 0.05$ ) and computed values of 'F' for A.V., S.V. and R.V. are significant ( $p < 0.05$ ). Therefore, research hypothesis  $H_4$  is **accepted** for T.V., E.V. and P.V. and research hypothesis  $H_4$  is **rejected** for A.V., S.V. and R.V. of language group, social science group and science group teacher educators. So it can be concluded that, there is no significant differences in T.V., E.V. and P.V. and there exists significant differences in A.V., S.V. and R.V. of language group, social Science group and science group teacher educators.

So it is further hypothesized below to find out which group differs from other group.

- $H_{4.1}$  : There is no significant difference in A.V., S.V. and R.V. of language and social science teacher educators.
- $H_{4.2}$  : There is no significant difference in A.V., S.V. and R.V. of social science and science teacher educators.
- $H_{4.3}$  : There is no significant difference in A.V., S.V. and R.V. of language and science teacher educators.

$H_{4.1}$ ,  $H_{4.2}$  and  $H_{4.3}$  are tested by employing 't' test and results are presented in table 5.

**Table 5 : Result of t-test based on the Value (A.V., S.V. and R.V.) of Language, Social Science and Science Teacher Educators**

Hypotheses	Group	Value	t-Values freedom	Degree of (2-tailed)	Significant	P. Value
$H_{4.1}$	Language Vs. Social Science	A.V.	2.206	143	**	0.029
		S.V.	1.189		N.S.	0.236
		R.V.	0.542		N.S.	0.589
$H_{4.2}$	Social Science Vs. Science	A.V.	2.213	143	**	0.028
		S.V.	1.908		N.S.	0.058
		R.V.	3.005		**	0.003
$H_{4.3}$	Language Vs. Science	A.V.	4.104	128	**	0
		S.V.	3.108		**	0.002
		R.V.	3.629		**	0

\*\* indicates significant at 0.05 Level and N.S. indicates Not Significant at 0.05 Level

**Interpretation of  $H_{4.1}$  testing :** Table 5 shows that the difference of between mean of A.V. scores of language and social science teacher educators is significant at 5% level, while that for S.V. and R.V. scores is not significant. Therefore  $H_{4.1}$  is **rejected** in the case of A.V.

**Interpretation of  $H_{4.2}$  testing:** The differences of mean A.V. and R.V. scores between social science and science teacher educators are significant at 5% level while that for S.V scores is not significant. Therefore  $H_{4.2}$  is **rejected** in the all cases of A.V., S.V. and R.V.

**Interpretation of  $H_{4.3}$  testing :** The differences of mean A.V., S.V. and R.V. scores between language and science teacher educators are significant at 5% level. Therefore  $H_{4.3}$  is **rejected** in the cases of A.V. and R.V.

Table 2 also shows that

- The A.V. scores of social science teacher educators is greater than that for language teacher educators.
- The A.V. and R.V. scores of science teacher educators is greater than that for social science teacher educators.
- The A.V. and R.V. scores of science teacher educators is greater than that for language teacher educators.

### ***Interpretation of the Results***

- 1) Table 3 already showed that there is no significant difference in the value system of male and female teacher educators. Dhillon and Kaur (2009) also found insignificant difference in the value patterns of male and female school teachers. But most earlier studies have been pointed out the significant gender differences (Dixit and Sharma, 1969; Kumari, 1981; Kumari, 1987; Mishra, 2009).
- 2) Table 3 already showed that there is significant difference in religious value between senior and junior teacher educators. Earlier researchers, Singh (1974) and Mishra (2009) also found that the age of teachers influence their religious value.
- 3) It can be observed from table 3 that there is insignificant difference in T.V., A.V., S.V., P.V., of teacher educators belonging to Government financed and self-financed B.Ed. Colleges though the differences for E.V. and R.V. are significant. But Dhillon and Kaur (2009) found insignificant difference in the value patterns of government and private school teachers.
- 4) Table 4 showed the influence of educational specialisation (Language, Social Science and Science) on the value system of teacher educators. Similar pattern of differences has been revealed by Andrews (1966) and Mishra (2009). Pachaury (1973) found the predominant values in the Science teachers.

### ***Conclusion***

Teacher educators possess insignificant difference of mean score, of theoretical value in respect of gender, teaching experience and nature of institution and educational specialisation. Therefore intellectual status of all teacher educators belongs to the same level. The difference of mean in economic value among male and female, senior and junior and among language group, social science group and science group, are insignificant. But it is significant between Government financed and self-financed, language group and science group teacher educators. In case of aesthetic value, the difference of mean score is insignificant, in respect of gender, teaching experience and nature of institution. But it is significant among each educational specialization group. In case of S.V., the teacher educators possess no significant difference of mean score, in respect of gender, teaching experience and nature of institution. But it is only significant between language and science group teacher educators. Therefore, the social responsibility of maximum teacher educators stands at same level. There is insignificant difference in political value in respect of gender, teaching experience and nature of institution and educational specialisation. In case of religious value, the difference of mean score is significant, in respect of teaching experience and nature of institution. It is also significant between social science group and science group, language group and science group teacher educators. Overall value system of teacher educators is found to be predominantly theoretical and social values. Therefore, the teacher educators give more emphasis on knowledge and community relationship than personal power.

The present study has some limitations. If the researcher considered more other variables (such as medium of instruction, socio economic background, residential place and institutional location of the teacher educators) in the study, the result would have been more informative.

### ***Educational Implication***

Based on the above research findings, some recommendations are given. There is significant difference in some specific values among teacher educators in respect of their educational specialisation. Therefore regular value orientation (on some specific values) is necessary for teacher educators. Moreover, educational policy makers, educational planners and administrators should be given importance in regular value orientation programme. Educational stakeholders may get a synoptic view about value system of teacher educators of West Bengal.

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## Research Abstracts

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### **History of Education : *Contribution of Christian Missionary***

Title	A study of the role of Christian Missionaries towards education of the Underprivileged Children.
Research Scholar	Anjana Sarkar
Supervisor	Mita Banerjee
Department	Education, University of Calcutta.
Degree Awarded	Ph.D. 2013
Availability of the thesis	Central Library, Calcutta University

The researcher did extensive study on the role and activities of the Christian Missionaries from the time of their advent in India up to the 21st century. Accordingly the researcher felt the urgency and the need to study the role which changed with time, of the Christian Missionaries towards the development of education in India. The researcher on her part visited a number of Christian Missionary Schools in Kolkata to establish the changing role of the Christian Missionaries towards the development of education for the Underprivileged and weaker sections of the society through their existing schools.

#### ***Objectives of the Study***

1. To find out the role of Christian Missionaries towards the development of education of the Underprivileged of India.
2. To find out how the role of Christian Missionaries changed over time towards the development of the education of the Underprivileged children since Independence through a Survey of ten such schools of Kolkata.
3. To find out the present day relevance of the role and contributions of the Christian Missionaries towards the Underprivileged children.

#### ***Tool***

An Interview Schedule was prepared by the researcher to collect information from Missionary Schools and also from the Underprivileged children studying in the different Christian Missionary Schools in Kolkata. The Interview Schedule which was prepared in English was verbally translated into Bengali and Hindi for the parents and the children in most of the schools being the mother tongue

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of the respondents. Special care was taken for the reduction of errors at the time of the Interview.

### ***Findings***

On the basis of the above information collected from the Christian Missionary Schools the Findings of the researcher are:-

The Underprivileged children range mainly from the streets, slums, working in other peoples' house or small rooms.

The income of the families of such children is very low and therefore they cannot provide such education to their children as are being provided by the Missionaries.

Most of the Underprivileged children have high ambitions and aspirations in life which are being fulfilled to some extent by the Missionaries.

The Underprivileged children are enjoying the same infrastructure like classrooms, playground, library, laboratory, washrooms as the regular school children.

Most of the Underprivileged children want to be successful in their future life and look after their parents and sustain their family.

The Missionary Schools have separate Evening Schools for the Underprivileged Students. But some schools are providing for their education in the regular schools.

Some of the Missionary Schools have boarding arrangements for the Underprivileged students.

The Missionary Schools are providing trained and qualified teachers for the education of the Underprivileged children.

The co-curricular activities like dancing, singing, art and craft provided by the Missionary Schools are helping the Underprivileged children to take up a vocation in future.

The Missionaries through their philanthropic work are successfully helping these disadvantaged children to come to the mainstream and through academics and vocational training they will be able to support themselves and their family in the long run.

The Missionary Schools are providing education mainly upto the elementary stage. This is how the vision of the Right to Education Act 2009 which has come into force presently is thus being fulfilled through the already great task taken up by the Missionaries from time immemorial.

So it is through their endeavour that the clauses of the Act will come to a success and the researcher hopes for a bright future ahead for the Underprivileged children.

The Sections of the Act related to the Underprivileged and weaker sections of the society will thus be benefitted with the help of the activities of such great Missionaries and their Missionary Schools.

Though the Missionary Schools are providing education upto the elementary stage but some schools are providing education up to the secondary stage.

### ***Conclusion***

Through the Historical Method of Educational Research and through rigorous analysis of related books from Libraries, Archives and Field Survey the researcher tried to draw out the active participation and work of Christian Missionaries in India, with reference to Kolkata, for the Underprivileged children.

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## Research Abstracts

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### Historical Research : *Derozio as a Revolutionary Educator*

<b>Title</b>	A Historical look into Henry Louis Vivian Derozio—The Revolutionary Educator of Indian Renaissance.
<b>Research Scholar</b>	Kavita Sarkar
<b>Supervisor</b>	Tarun Ranjan Majumdar
<b>Joint Supervisor</b>	Mita Banerjee
<b>Department</b>	Education, University of Calcutta
<b>Degree Awarded</b>	Ph.D 2014
<b>Availability of the thesis</b>	Central Library, Calcutta University

Henry Louis Vivian Derozio was one the most remarkable personalities of the nineteenth century Bengal Renaissance. He played a great role in bringing about regeneration in Bengal at a time when Indian society was gripped in darkness of ignorance, superstitions, irrational orthodoxy and prejudices. He has a just claim of being the inaugurator of western learning into India. The patriotic tradition initiated by him in Indian poetry continued to flow throughout the 19th and 20th century. He was successful in imbibing his students with a desire of knowledge for truth. In spite a number of contributions made by Derozio within a very short span of life of 22 years, 8 months and 8 days, his efforts have not being duly acknowledged. A misconception still persists that Derozio and Derozians were a group of errant people, steeped in extreme Anglicism who were indifferent to the needs of their country and lived an intemperate life. The present research work has tried to make an impartial assessment of Derozio and his contributions to Indian society.

The method of Historical research has been followed in the present study. The data collected from primary and secondary sources have been analysed qualitatively by carefully examining the books, articles, prose writings, letters and Will written by Derozio. The major works on Derozio written by eminent writers has also been scrutinized thoroughly. An indepth study of the historical perspective against the background of which Derozio was born has also been done. From all these relevant sources the researcher has found out that:

Derozio was much ahead of his times. The conservative orthodox Hindus

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out of their own bigotry and prejudices failed to appreciate the progressive ideas initiated by Derozio and he was made a scapegoat in a very unhappy situation.

Derozio's concept of education, his method of teaching, his selfless love and devotion for his pupils, his independency of spirit and his zeal for social reforms remains unchallenged. At present when the Education system has driven young minds into unconsciousness where they fail to understand the significance of the past, the realities of the present and the mission of the future the teachings of Derozio are highly relevant.

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## Research Abstracts

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### *History of Education : Development of Women Education*

<b>Title</b>	A Study on the Contributions of Some Women Litterateurs Towards the Development of Women Education in Bengal From Swadeshi to Swaraj
<b>Research Scholar</b>	Indrani Adak
<b>Supervisor</b>	Mita Banerjee
<b>Department</b>	Education, University of Calcutta
<b>Degree Awarded</b>	Ph.D 2013
<b>Availability of the thesis</b>	Central Library, Calcutta University

Women education has always been a matter of grave concern for educationists throughout the world. In India, till date there exists a disparity in the ratio between boys and girls in school and so does in the status of man and women in the society. In the past women education had led to the production of women litterateurs who in turn have helped in the development of women education. The present research work is an investigation on how women litterateurs have helped in the development of women education in Bengal from Swadeshi to Swaraj. The study has been delimited to only 6 (six) important women litterateurs and educational thinkers between 1900 and 1947, namely: Sushama Sundari Tagore, Sarala Devi Chaudhurani, Begum Roquiah Sakhawat Hossain, Ashalata Sen, Sushama Sengupta and Nalini Das.

The present study follows in general the method of **Historical research**. The data collected from primary and secondary sources have been analyzed qualitatively, looking into the writings of the women litterateurs under study, their autobiographies, writings of others on the women litterateurs under study and other relevant documents available to the researcher. From all these relevant sources the researcher has drawn out the :

- literary works of women litterateur and their contribution towards the development of education in Bengal
- philosophical, political and cultural inputs in the writings of women litterateurs in Bengal

From this extensive study the researcher has found that the footprints of some

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of these great ladies have withered away with time but some of them remain prominent even till date. The works of these ladies have led to formation of women organizations and female schools in Bengal. The schools started by Begum Roquiah (*Sakhawat Memorial Government Girls' High School*) and Sushama Sengupta (*Lake School for Girls*) have withstood the test of time and are premium schools of Kolkata today serving the cause of women education. Begum Roquiah's *Anjuman-e-Khawatin-e-Islam*, function in Kolkata helping Muslim women in destitute. The girls' school of Ashalata Sen's *Gandaria Mahila Samity* provide education and vocational training to women in destitute in Bangladesh. The works started by these great ladies have been accelerated in post independent India and Bangladesh but still a lot needs to be done for the development of women education.

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## Research Abstracts

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### History of Education : *Sir Asutosh Mukhopadhyay*

<b>Title</b>	Sir Asutosh Mukhopadhyay, Calcutta University and The Development of Nationalism in Bengal
<b>Research Scholar</b>	Debjani Sarkar
<b>Supervisor</b>	Mita Banerjee
<b>Department</b>	Education, Calcutta University
<b>Degree Awarded</b>	Ph.D 2014
<b>Availability of the thesis</b>	Central Library, Calcutta University

Sir Asutosh Mukhopadhyay was undoubtedly the outstanding figure in the history of higher education in India. He grew up in the formative period of Nationalism. He was keen to bring India to the midcurrent of modern intellectual life and combined in rare perfection reverence for India's intellectual tradition with a passionate pioneering zeal for modern studies. The greatest work of Sir Asutosh lay in the sphere of University education. He understood that autonomy and freedom is necessary. So he wanted to make the University of Calcutta free from external control, free from British rule. But he was not in favour of National Education Movement which started in Bengal during his Vice-Chancellorship. He had the realization that a Nation cannot be lifted all of a sudden to a higher plane. He was free from racial, sectarian and provincial narrowness and helped to make University a truly National Institution in that period. Sir Asutosh 'The Tiger of Bengal' as referred by many great people of the time is certainly unforgettable. The ideas infused by him related to University education still hold a permanent place in the University. Sir Asutosh is very much remembered and honoured by the University of Calcutta which is proved on several occasions.

A study on Sir Asutosh Mukhopadhyay and Calcutta University during the period of development of Nationalism in Bengal is very relevant with the scope of Historical Research. The researcher has undergone a thorough analysis of both primary and secondary sources of data while doing the work. In the present study since the historical documents are mostly written materials the status of the author in the context of the event is ascertained.

The researcher has tried to bring forward Sir Asutosh Mukhopadhyay's

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unique way to reform the University during the period of development of nationalism in Bengal, although he never joined hands with the movement. He was a patriot but he hated the platform of nationalism. He was a man of work and proved that in every sphere.

The Research aims at determining and presenting truthfully the role played by Sir Asutosh in Calcutta University during the crucial period of development of nationalism in Bengal and the reflection of patriotism in his educational thought and practice. At the same time the relevance of his thought and practice in the current period.

Sir Asutosh believed that Nationalism might be achieved through education. In fact our debt to Sir Asutosh particularly in respect of expansion of higher education is beyond measure. Bengal as well India will remember this great person the whole year around and years to come.

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Research Abstracts

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**Inclusive Education : *Comparative Study***

<b>Title</b>	A Comparative Study of the Education of the Blind in India and Japan
<b>Research Scholar</b>	Ritwika Laskar
<b>Supervisor</b>	Jayanti Das
<b>Joint Supervisor</b>	Mita Banerjee
<b>Department</b>	Education, University of Calcutta
<b>Degree Awarded</b>	Ph.D, 2014
<b>Availability</b>	Central Library, University of Calcutta

***Problem***

Education of children with special needs has received a lot of attention over the years. Various provisions and Acts have made to ensure education of these children. The study investigated into the system of education for blind children in India and Japan. The system included all the aspects like facilities provided, system of enrolment, curriculum, method of teaching and examination, teaching aids used and system of inclusion. The study was delimited with Special Schools for the Blind in Kolkata (India) and Tokyo (Japan) and Blind children only. While comparing the curriculum, the subjects taught in classes IV and V were only taken into consideration.

***Objectives***

The **objectives** of the study are as follows

To compare :

- i. Number and Nature of the institutions for blind children in India and Japan;
- ii. The system and extent of enrolment in India and Japan;
- iii. Curriculum for the blind children in India and Japan;
- iv. Nature of teaching method for the blind children in India and Japan;
- v. Examination system in India and Japan;
- vi. Teaching materials and equipments used in the institutions for the blind children in India and Japan and
- vii. The system of Inclusion in India and Japan.

### *Sample*

Purposive Sampling Technique was used. 6 Special Schools for the Blind, 3 each from Kolkata and Tokyo were chosen for the study. 100 students and 50 teachers from these schools were included in the sample of study.

### *Tools*

- Government List was checked; and an Interview Schedule was used to obtain data from the Principal/Teacher-in-Charge about the nature.
- School Records were checked to find out about the system of enrolment.
- Course Content was analyzed to compare the curriculum.
- To compare the teaching method Questionnaires were used to obtain data from the teachers.
- To compare the examination system Questionnaires were used to obtain data from the teachers and the children.
- Checklist was used to compare the teaching materials and equipments used.
- To compare the system of Inclusion, Government List was checked.

### *Analysis of the data*

Survey was conducted in the Special Schools and the data obtained was analyzed qualitatively only.

### *Findings*

Regarding nature, it was seen that the Special Schools in Tokyo provided almost similar and uniform facilities but in Kolkata the facilities were not provided uniformly. The system of enrolment of blind children was quite different in Kolkata and Tokyo. The difference was mainly because of differences in the rules and regulations laid down by the respective Governments. Regarding certain subjects like Science, Mathematics, Music, etc nature of the course content was quite similar. Some of the subjects like Home Economics which was taught only in Tokyo could also be introduced in Kolkata. The duration of training in the subjects of Plus Curriculum/Independent Activity was much more in the Special Schools of Tokyo than in Kolkata. In both Kolkata and Tokyo, the method of teaching blind children was called Audio-Tactile Method. Regarding system of examination, the study revealed that all the 3 Special Schools for the Blind in Kolkata followed their own systems of examining blind children. However, in Tokyo all the Special Schools for the Blind followed a uniform system of examination. Some of the teaching equipments used in Tokyo could also be introduced in Kolkata. While in Kolkata there existed a policy which had the

provision of reserving seats for blind/visually impaired children in general schools, but on the other hand there was no such provision in Tokyo. The Government, however, took an active part in providing assistance to the blind children in both Kolkata and Tokyo.

### ***Conclusion***

The study highlighted the similarities and differences between and within the Special Schools for the Blind in Kolkata and Tokyo. It also pointed out whether and to what extent changes can be brought about into the system of education blind children.

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## Research Abstracts

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### **Primary Education : *Cognitive Processes in Arithmetic Learning***

<b>Title</b>	A Study of Cognitive Processes in Arithmetic Learning at The Lower Primary Level
<b>Research Scholar</b>	Sanghamitra Ghosh (Gayen)
<b>Supervisor</b>	Aditi Ghose
<b>Department</b>	Education, University of Calcutta
<b>Degree Awarded</b>	Ph.D. 2014
<b>Availability</b>	Central Library, University of Calcutta

### ***The Objectives***

1. To investigate the relationship between numerical skills and understanding of number operations among lower primary school children.
2. To investigate the relationship between numerical skills and the application of numbers to physical situations among lower primary school children.
3. To investigate the relationship between understanding of number operations and the application of numbers to physical situations among lower primary school children.
4. To investigate the relationship between language comprehension and understanding of number operations among lower primary school children.
5. To investigate the relationship between language comprehension and the application of numbers to physical situations among lower primary school children.

### ***The hypotheses***

Based on five research objectives five hypotheses has been developed.

### ***Tools***

1. Tools developed by the investigator
  - a) Test on numerical skills
  - b) Test on understanding of number operations
  - c) Test on application of numbers to physical situations
  - d) Test on language comprehension based on oral and textual matter

2. Intelligence test–Culture fair (or free) intelligence test (A measure of “g”);  
Scale 1 and Scale 2. Cattell, B.R. (1959)

### ***Sample***

The sample consisted of boys and girls from rural and urban areas of South Bengal.

### ***Findings***

The findings indicate that mathematical skills and understanding of number operations are highly interrelated and together contribute to applicative abilities of children. The study also showed that language comprehension and understanding of number operations are highly related. Without proficiency in language the child will find difficulty in understanding what is required in the applicative situation.

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## Research Abstracts

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### **Psychology of Education : *Psycho-Social Elements of Students***

<b>Title</b>	A Study of the Psycho-Social Elements of Students in Jesuit Educational Institutions
<b>Research Scholar</b>	Charlotte Simpson
<b>Supervisor</b>	Aditi Ghose
<b>Department</b>	Education, University of Calcutta
<b>Degree Awarded</b>	Ph.D. 2014
<b>Availability</b>	Central Library, University of Calcutta

The study deals with the psycho-social elements of students in Jesuit educational institutions in the Calcutta Province of the Society of Jesus.

The research is approached in two parts: Part A and Part B.

#### ***Part A***

Part A is an exploratory and descriptive study against the background of the educational policies of Jesuit educational institutions and national educational policies. This is in order to ascertain the points of coincidence and divergence of the policies of Jesuit educational institutions in Calcutta Province with that of the educational policies of the National government.

Part B is to analyze if there is any bias, for or against admission of the students from the Lower SES group and to ascertain whether the Lower SES group students have as high Achievement Motivation; are doing as well academically; have as high Self Concept and have as high Altruism as students from other SES groups studying in the six Jesuits educational institutions of Calcutta Province.

The method of study to achieve the objective of Part A was through a historical critique, by studying various documents of the National educational policies of the Indian government, before and after independence and the Jesuit educational policies and Catholic Church documents.

#### ***Part B***

The method of study to achieve the objectives of Part B was through a quantitative analyses and interpretations of data collected from a random sample of 2019 students across six Jesuit schools of Calcutta Province.

Four standardized tests namely, Adapted Beena Shah's SES Scale, (1986); Deo-Mohan Achievement Motivation Scale, (1985); S.P. Ahluwalia Children Self Concept Scale, (1986) and Ghose and Ray Altruism Scale (2007) were administered. The participants also completed an interview schedule in order to develop a descriptive profile of the sample. The academic results of two of the recent test performances of these students were collected from the school administration in order to ascertain their Academic Status. Appropriate statistical techniques consisting of descriptive statistics, chi-square test, analysis of variance test and t-test were used, as required, for the analysis of the data and the results were interpreted.

### *Findings*

The study showed that as per Jesuit policies and national policies on education, tending to the deprived and the marginalized is the main aim in imparting education by the Jesuits of Calcutta Province. However, the quantitative analyses and interpretations of data show that the lower SES group suffers in comparison to other SES groups in various aspects such as proportion of admission of the lower SES group students as compared to the other SES groups, as well as in the development of psycho-social elements such as Achievement Motivation, Academic Status and Self Concept. The exception is that of Altruism where not much of a difference is observed in the Altruism scores of the different SES groups. Therefore, the study shows that Jesuit education in Calcutta Province needs to focus on the marginalized and the disadvantaged in their formal institutions of education in more meaningful ways.

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